

CONSEIL PERMANENT INTERNATIONAL POUR
L'EXPLORATION DE LA MER
CHARLOTTENLUND SLOT — DANEMARK

RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXXXV

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(SEPTEMBRE-OCTOBRE — 1953)

2^{ÈME} PARTIE
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QUARANTE-ET-UNIÈME RÉUNION COPENHAGUE, SEPTEMBRE — OCTOBRE 1953

BUREAU DU CONSEIL:

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¹⁾ Décédé le 12 Février 1954.

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Jusqu'au 31 Décembre 1953:	A partir du 1er Janvier 1954:
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¹⁾ Mr. KJÆR HANSEN has resigned his post and will be leaving the Council's service for another post at the end of January 1954.

AGENDA

for the forty-first Meeting of the International Council for the Exploration of the Sea.
Copenhagen, 28th September—6th October 1953.

A. General Assembly: Opening Meeting.

1. Welcòme and Opening Address by the President.
2. Report as to Present Participation.
3. Presentation of Administrative Report.
4. Presentation of Estimated Statement of Accounts for 1952-1953.
5. Report on Overfishing.

B. Meeting of Delegates.

6. Opening of the Proceedings by the President.
7. Appointment of General Secretary.
8. Appointment of an *ad hoc* Committee to propose Election of President, First Vice-President, and three Vice-Presidents.
9. Election of President, First Vice-President, and three Vice-Presidents.
10. Consideration and Adoption of Amendments of the Statutes.
11. Final Approval of the Accounts for 1951-1952.
12. Adoption of the Administrative Report.
13. Consideration of Reports of Committees submitted by the Consultative Committee.
14. Estimate for the Financial Year 1953-1954.
15. Nomination of Finance Committee Members, and Editors.
16. Other Business.

C. General Assembly: Final Meeting.

17. Opening of the Proceedings by the President.
 18. Presentation of Recommendations by the Consultative Committee, adopted by the Council.
 19. Time and Place for next Council Meeting.
 20. Other Business.
 21. Conclusion of the Meeting.
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1^{ÈRE} PARTIE

PROCÈS-VERBAUX

REPORT

of

THE FORTY-FIRST MEETING OF THE COUNCIL

General Assembly, Opening Meeting, Monday, 28 September 1953, at 10.00 a.m.

Agenda, Point 1. The President opened the meeting and said:—

“Mesdames et Messieurs,

A beaucoup d'occasions précédentes, c'était l'habitude du Président du Conseil d'exprimer quelques phrases en français pour souhaiter la bienvenue aux participants de la réunion inaugurale.

Je pense qu'il serait regrettable d'ignorer une coutume si méritante. Conséquemment, pour rendre honneur aux Messieurs les Délégués et Experts, qui parlent la langue française, je vous souhaite la bienvenue cordiale à cette réunion et exprime mon espoir que vos efforts seront couronnés de succès.”

The meeting then decided to send telegrams to His Majesty the King of Denmark, to the Council's Honorary President, Dr. K. A. ANDERSSON, and the Spanish Senior Delegate, Admiral RAFAEL GARCIA-RODRIGUEZ, who was unable to attend the meeting.

The President mentioned the retired Delegates:—Dr. K. A. ANDERSSON, Sweden; M. H. DE VOS, Belgium; and Mr. J. E. DE WATTEVILLE, Scotland.

The President welcomed the new Delegates:—the Fisheries Secretary for Scotland, Mr. A. J. AGLEN; M. ANDRÉ ALLOY, France; Dr. JÖRAN HULT, Sweden; and Dr. E. LELOUP, Belgium. The President also welcomed Dr. JULIUS CLAUSSEN and Dr. GERHARD MESECK, Germany, who for the first time after their country's re-entry in the Council were attending a Statutory Meeting as Delegates. The President welcomed the Experts, Observers and Guests and mentioned the several international organisations with which the Council co-operated and which were

represented by their Chairmen or Vice-Chairmen on this occasion, and mentioned the presence of students from Greece and Argentine. The President finally welcomed the representatives of the University of Copenhagen and the Danish scientific institutions, and Professor SPÄRCK and Dr. ANTON FR. BRUUN of the “Galathea” Expedition. The President expressed the Council's pleasure at seeing a representative of the Polish Legation at Copenhagen as the Council's guest, the presence of whom is hoped to be indicative of the desired re-entry to the Council of the Polish Government.

Agenda, Point 2. The President said that after the admission of the German Federal Republic as from 1 November 1952, the number of Member Governments adhering to the International Council is 13.

Agenda, Points 3 and 4. The General Secretary drew attention to the Administrative Report and the Report of Area and other Committees and the Preliminary Accounts for the current financial year, which documents the participants would find in a newly erected distribution cabinet in the entrance hall of the Castle at Charlottenlund.

Agenda, Point 5. The President introduced Mr. R. G. R. WALL, Fisheries Secretary of England and Wales and Chairman of the Permanent Commission set up in connexion with the International Fisheries Convention of 1946.

Mr. WALL said:—

“I should like to thank you, Mr. President, for your kind words and your welcome here to Mr. AGLEN and

myself as newcomers from the United Kingdom; and I should thank you, ladies and gentlemen, for your courteous reception.

You have kindly invited me to speak of the Permanent Commission, to the Chair of which I have had the honour of being elected, and I am especially glad to be given such an opportunity here at the International Council for the Exploration of the Sea, because we in the Permanent Commission think of this Council as our wise uncle to whom we come—not as nephews commonly do, for money, let me assure you of that—but for scientific knowledge and advice.

Your Council is the acknowledged European forum for scientific research and experiment in the fisheries of the northern seas. The Permanent Commission is to be, as I see it, the body for the application of scientific knowledge in the management of the fisheries—through internationally agreed measures and policies.

It is not only science the Permanent Commission will need. The practical experience of the fishermen also counts for much. And we shall need the “sens du pratique”, as our French friends say.

But without the work of the scientists and your Council, past, present and continuing, the Permanent Commission would be blindfold in pursuing its task of bringing about the better management of the fisheries which our countries exploit in common.

Indeed, all this was fully in the minds of those who framed the Convention of 1946, under which the Permanent Commission is established. In pursuing its task, the Permanent Commission is required, in the words of the Convention, to “consult where practicable the International Council for the Exploration of the Sea”. The first fruits of this requirement, which has the very willing acceptance of the Commission, lie before your Council at their present session.

We have asked your Council for assistance in two matters. Firstly, we are seeking your scientific advice on the state of the cod, haddock and plaice fisheries in northern waters—because we are concerned to know whether further measures of conservation are required for these fisheries; and secondly your scientific advice on a proposal which the Permanent Commission has before it that the provisions of the Convention of 1946 should be extended to include the area of water as far south as latitude 36° N., which would take in the whole of the continental shelf off the Atlantic coasts of France, Spain and Portugal.

The Council have kindly arranged to study these questions at this present meeting, and we shall be greatly helped by your advice. (See Appendix, p. 16.)

The Permanent Commission came into being in the spring of this year and we held our First Meeting in May. We are meeting again in November this year. It is, of course, too early to speak of achievement, but there is this: since this Council last met, the Convention of 1946 has been brought into force, the Permanent Commission has been set up and begun to work—and, not the least important thing, we are getting to know one another on the Commission—; and for the

better conservation of the fish stocks new sizes of mesh and new size-limits for fish landed and sold are due to take effect next April in all the twelve countries which are parties to the Convention and members of the Permanent Commission.

These new measures are in accordance with the terms of the Convention, which made constructive prescriptions on 3 matters: on mesh sizes for nets; on size-limits for fish landed and marketed; and on the setting up of the Permanent Commission, which has the duty of considering whether the provisions of the Convention should be extended or altered.

There is at present some uncertainty, some difference of views, among the member countries whether the Permanent Commission is thereby limited to the subjects of mesh size and fish size-limits alone or whether the Commission is empowered to go beyond these particular methods of conservation and to take within its scope the whole subject of conservation and the prevention of overfishing by whatever methods of management of the fisheries may be scientifically and economically desirable and at the same time amenable to international agreement. The question at issue—let me make this plain—is not whether international co-operation to prevent overfishing is desirable and necessary. That is agreed. The question is whether the Permanent Commission is empowered under the 1946 Convention to act as the instrument for that purpose.

I feel confident that in this matter our several countries will in no long time find together a satisfactory solution; and it is my earnest hope that we shall be able to do an increasingly valuable job in bringing about the united application of sensible conservation measures and practices to the fisheries upon which we all greatly depend, in the wide expanse of seas which the Permanent Commission has in its care. In that we shall need, as I have said, the continuing help and advice of this Council, and I do not doubt we shall find it readily available to us. For not only are very much the same countries members of the International Council and of the Permanent Commission, but I see with interest and pleasure that many of the actual faces around this conference table bear a remarkable resemblance to those we see at the Permanent Commission.

So I look forward the more confidently to that close and intimate co-operation between your Council, Mr. President, and the Commission which is undoubtedly essential.”

Before the meeting concluded, the President informed the Assembly that Madame SCHMIDT had presented a unique plate to the International Council, in which she had always taken such great interest. The plate had been twice round the world; first with the “Dana” Expedition and lately with the “Galathea” Expedition, 1951/1952. The generous gift would be placed in the Council Room and would always be cherished by the Council, as an “everlasting possession”.

The meeting adjourned at 10.30 a.m.

Meeting of Delegates, First Session, followed immediately.

Agenda, Points 6 and 7. The President opened the proceedings and referred to the circular letters informing the Delegates of the appointment of Mr. ÅRNI FRIDRIKSSON as full-time General Secretary from 1 January 1954, to which date the present General Secretary remains in office.

Agenda, Point 8. The President said that the Bureau proposed that the Council again elected an *ad hoc* Committee, consisting of three members and to represent each of the following three groups of participating countries, which included Germany for the first time:— 1) the Scandinavian countries: Denmark, Finland, Iceland, Norway, Sweden; 2) Germany, Ireland, Netherlands, United Kingdom; 3) Belgium, France, Portugal, Spain.

Mr. DINESEN suggested that it might be unnecessary on this occasion to appoint an *ad hoc* Committee to propose election of President and other members of the Bureau in case the present members were willing to accept re-election, in which case Mr. DINESEN would propose re-election *en bloc*.

Dr. RAMALHO moved that the Election Committee of three Delegates should be appointed and then ascertain whether the present Bureau members would stand for re-election.

The President was in favour of upholding the procedure adopted in 1952 of appointing an *ad hoc* Committee to propose the election of the Council officers.

No Delegate seconded Mr. DINESEN's proposal. The meeting adopted Dr. RAMALHO's suggestion and decided that an *ad hoc* Committee should be appointed, and the President asked that the necessary action should be initiated at once.

Agenda, Point 10. On the President's proposal, the Delegates approved the following amendments of the Statutes, which had already been circulated:—

Rule 12, first paragraph, to read: "There shall be a Consultative Committee consisting of all Chairmen of standing Committees, the Editor of the *Journal du Conseil* and such Editors as may be decided from time to time by the Bureau."

Appendix II, Regulations concerning Administration, Finance. 1.:— The words "Treasury Bonds at free disposal of the International Council for the Exploration of the Sea" to be substituted by the words "Bonds of the International Council for the Exploration of the Sea".

The following paragraph to be added:— "The Council's Funds may be invested in such Danish Bonds in which investment of the capitals belonging to Minors and other capitals subject to Public Administration or Control, according to prevailing Danish law, is allowed."

Agenda, Point 11. The President moved the final approval of the Accounts for 1951/1952. This was carried.

The meeting adjourned at 11.00 a.m.

Meeting of Delegates, Second Session, Monday, 28 September 1953, at 2.20 p.m.

The President opened the proceedings and called on the Chairman of the *ad hoc* Committee to report.

Dr. WENT said that the Election Committee had been composed of Dr. RAMALHO, Mr. ROLLEFSEN and himself, and moved the re-election of Mr. DOBSON as President, Professor JEAN LE GALL as First Vice-President and Mr. LIENESCH, Professor SVERDRUP and Dr. VEDEL TÅNING as Vice-Presidents, and this was carried unanimously.

The President, on behalf of all the members of the new Bureau, expressed grateful satisfaction at this mark of confidence.

The President said that, at the Delegates Meeting dealing with the Council's accounts, it would be in order for any Delegate to be accompanied by an Expert.

The meeting adjourned at 2.30 p.m.

Meeting of Delegates, Third Session, Tuesday, 6 October 1953, at 10.00 a.m.

The President opened the meeting and explained about the rearrangement of the Sessions of the 41st Council Meeting.

Agenda, Point 12. The Council adopted the General Secretary's Administrative Report for 1952—1953 and the Report for the year 1952 by Area and other Committees.

Agenda, Point 13. The President explained the financial obligations involved in the approval of the reports. The President called on the Chairman of

the Consultative Committee to give a brief account of the recommendations of the Consultative Committee which had been approved *in toto* by the Bureau.

Mr. WIMPENNY commented on the recommendations contained in a document laid before each Delegate.

The Council adopted the recommendations submitted. See list of Resolutions below (p.17).

Agenda, Point 14. The President referring to the document containing the Final Draft Estimate of

Expenditure and Receipt for 1953—1954, revised 5 October 1953, then presented the Budget for 1953/54.

The Council approved that the President, who for the coming year again would renounce his honorarium as President without creating any precedent, should receive an amount of 1,000 kroner as an entertainment allowance.

The President said that Mr. WIMPENNY, who, like the President, did not wish to create any precedent, renounced his honorarium as Chairman of the Consultative Committee and only desired to have his out-of-pocket expenses refunded up to a maximum amount of 500 kroner.

The Council approved this.

The President explained the various items contained in the Final Draft Estimate.

The Council approved the pensions payable, besides the Council's parting gift to Miss REHDER of 750 kroner, and adopted the estimates.

Agenda, Point 15. The Council elected Dr. B. KULLENBERG, Sweden, Dr. E. LELOUP, Belgium, and Dr. WENT, Ireland, as members of the Finance Committee, to which the President had appointed

Mr. LIENESCH and on which also served the two Danish Delegates *ex officio*.

The Council elected for 1953—1954 Lt.-Cdr. LUMBY as Editor of the *Journal du Conseil*; Dr. G. THORSON as Editor and Mr. F. S. RUSSELL as Co-Editor of the *Fiches d'Identification du Zooplancton*. As regards the Editorship of the *Annales Biologiques*, Dr. VEDEL TÅNING would continue until 1 January 1954, after which date Mr. ÅRNI FRIDRIKSSON would act as Editor as one of his duties as General Secretary to the Council. As regards the Statistical Bulletin, Dr. HULT said that Dr. ROSÉN had retired from the service several years ago and that the Swedish Government would like to appoint a new scientist to the Swedish Delegation.

The President proposed that Dr. ROSÉN should be re-elected as Editor of the *Bulletin Statistique* pending a possible change in the composition of the Swedish Delegation.

This was approved by the Council.

Agenda, Point 16. The President informed the Delegates what the procedure would be at the Final Meeting.

The Session closed at 10.26 a.m.

General Assembly, Final Meeting, Tuesday 6 October 1953, at 11.00 a. m.

Agenda, Point 17. The President opened the meeting and then called on the General Secretary to read the following telegrams:—

“Mes Remerciements sincères pour aimable
Télégramme. FREDERIK R.”

“Sincere thanks for your kind telegram. I wish your meeting to be most successful. I am still living very much with the Council.

K. A. ANDERSSON.”

“Je vous remercie pour votre salutation et vous exprime mes vœux pour la bonne réussite de la présente Assemblée.

Amiral GARCIA RODRIGUEZ.”

The President referred briefly to the estimate of the accounts for 1953—54 adopted by the Council and showing a total expenditure of 293,000 kroner and an excess of income over expenditure of 35,000 kroner.

Agenda, Point 18. The Chairman of the Consultative Committee, Mr. WIMPENNY, mentioned the new arrangements of the Committee meetings adopted this year. Mr. WIMPENNY stressed the importance of authors continuing to submit extracts of their papers in ample time before the meetings, so that they could be fully used in discussion.

Mr. WIMPENNY reported on the Council's resolutions based on the recommendations submitted by the Consultative Committee and approved by the Bureau. See Appendix, p. 16, and Recommendations p. 17.

Agenda, Point 19. The Council approved that a cordial acceptance be given to the French Govern-

ment's invitation to hold the 42nd Statutory Meeting in Paris from Monday, 4 October, to Tuesday, 12 October 1954.

This resolution was warmly applauded (see Resolution C. Rec. 1953/9 below, p. 17).

Professor LE GALL spoke briefly about the planned organisation of the Council Meeting 1954.

Agenda, Point 20. The President called the attention of the meeting to the proposed Press Release which had been distributed among the meeting participants and which would be sent for publication this afternoon.

The President informed the Assembly that costly furniture, pictures and porcelain which had been on loan for 20 years had now been presented as a gift to the Council by Mme I. SCHMIDT in memory of her husband, the late Dr. JOHS. SCHMIDT. This gift was received with acclamation by the Council and the President told Mme SCHMIDT, who had accepted the Council's invitation to honour the meeting with her presence, that the International Council would never forget the debt they owed to their great benefactor.

The President went on to mention the many important and numerous guests attending the Council Meeting, among whom were representatives of four other international coalitions (Chairmen and Vice-Chairmen).

Dr. G. L. KESTEVEN, Chief, Marine Fisheries Section, Biology Branch Fisheries Division, FAO, Rome, made the following statement:—

“In FAO we recognize that in recent years some

very significant changes have taken place in the fisheries world, and being impressed with the importance of these changes, we thought it desirable to speak of them to this Council. I should like to refer to three of them; firstly, the recently awakened, and now very considerable, public interest in matters concerning the waters of the world; secondly, the technical changes which have taken place in the exploitation of the aquatic resources; thirdly, the growing stature of fisheries science.

In speaking of awakened popular interest in the seas I am not thinking only of the phenomenal sales of RACHEL CARSON's book, nor of the popularity of underwater swimming with the aqualung, although these represent an important aspect of the matter. I refer more particularly to the fact that the world at large seems at last to have become aware that although the aquatic resources provide now only a small proportion of man's food supply this need not be so but, on the contrary, these resources ought to produce a great deal more. An attempt was made at the UNSCARR meeting, to form some idea of what this future role of these resources might be; we in the Fisheries Division of FAO have recently made a revision of that survey and perhaps our main conclusion was that there is every reason to believe, from biological and technological considerations, that production from aquatic resources could, in terms of present forms of production, be increased even more than FAO's 1951 estimate of two- or three-fold, whilst in terms of novel utilisation this increase could be several-fold. It is all part of the picture that many under-developed countries are looking for substantial development of their fisheries as an important element of their expanded economies. In contrast with this rather optimistic view, we are forced, however, to take cognizance of the fact that production increases are not taking place as quickly as the food situation would seem to demand, and the resources and techniques would allow, and that in fact there are numerous factors, many of them socio-economic, which restrain development. Such difficult matters as incentive, education, consumer-preference and industrial organization, bedevil every administrator who has a charge to secure development of his country's fishery industries. It is part of our theses that in the new situation of fishery science one of the tasks is to achieve a balance between the somewhat more attractive work in biology and technology, on the one hand, and that which must be done on these more recalcitrant problems on the other.

In respect of the first important change, then, there are two major aspects. One is:— how are we to improve our estimate of the aquatic resources and their potential productivity, and at the same time our understanding of these resources and how they may best be exploited? The second is:— how are the impediments to development to be removed? The first aspect is faced by the second major change to which I referred, namely, the technical changes in exploitation. Here I refer not so much to improvements in

design of fishing craft, to radio, echo-sounding, asdic and new kinds of gear, as to the fundamental fact that these are giving us the means by which to employ our knowledge of fish stocks (their distribution, abundance and behaviour) in a way which will convert fishing from the hunting stage into a kind of animal husbandry. These improvements obviously are reducing the risk element in fishing, a reduction which is carried further by the development of biological prediction systems. What is less obvious perhaps is the effect upon the young new science, fishery science, of this exercise of its muscles and acceptance of responsibility. We believe that fishery science is now emerging as a distinct, autonomous science analogous with agricultural and veterinary science, whilst at the same time its capacities are being subjected to undue strain. In claiming the emergence of fishery science we would make certain stipulations:— firstly, that this science has at least three parts, namely, fishery biology, fishery economics, and fishery technology (or engineering, if you prefer); we are not sure, but we suspect that there is also a distinct field of fishery oceanography, secondly, that fishery biology is not to be equated with marine biology or limnology, nor is it to be held to comprehend the whole of the science; thirdly, that the function of the science is not only to propose conservational restrictions upon fishing activity, but rather it is to give assistance in the broadest sense—this may perhaps be signified by the term "fishery management", which includes the appraisal of under-exploited stocks and the finding of new ones, and the formulation of plans for their better exploitation.

You may ask why I speak of these things to you who know them well, and the reply is that I speak of them as a whole, not as separate propositions, for it is our impression that the failure to see and speak of these matters as a whole is responsible, in part at least, for certain of the difficulties with which fishery workers around the world are confronted. There are not enough fishery workers, and there are far too few separate skills among them. Too much or too little is expected of them; most often too much and the fishery biologist is generally expected to be a worker of miracles. The dearth of workers is caused by lack of direct educational facility and by lack of professional opportunity—and this situation arises from a lack of recognition of the need for specially trained people, as well as from the serious confusion of marine biology and limnology with fishery science by way of an identification of the latter with fishery biology. Thus, we believe that there is urgent need not only to increase the educational facilities for fishery science, but also to subdivide and stabilise its curriculum.

It is for this reason, Mr. President, that we ventured to ask to be able to take up some of your Council's time. Fishery science was born here, and suffered here the vicissitudes of its adolescence: we think that most probably it will graduate here. We believe also that the Council's knowledge of fishery resources and its experience in matters concerning their exploitation will

enable it to take a lead in the conversion of fish-hunting to fish-husbandry and in all which that will mean in bringing new areas and new resources under exploitation."

The President thanked Dr. KESTEVEN for his interesting speech.

Dr. HERBERT W. GRAHAM, Chief, North Atlantic Investigations, U.S. Fish and Wildlife Service, Department of the Interior, Washington, U.S.A., and Dr. ERIK M. POULSEN, Executive Secretary to the International Commission for the Northwest Atlantic Fisheries, Canada, expressed their appreciation at having been invited to attend the Council Meeting as observers.

The President said that Dr. A. R. MOLANDER, Sweden, had unfortunately been unable to stay for the last meeting. As Dr. MOLANDER, who had been attending the Council Meetings since 1913, was now resigning, the participants would have liked to say good-bye to the distinguished Swedish scientist who had so many friends in the Council.

The President mentioned that Dr. MOLANDER had almost equalled the record for attendance at Council Meetings held by Mr. EINAR LEA, Norway. The President asked the Senior Swedish delegate, Dr. HULT, to convey the Council's greetings to Dr. MOLANDER.

The President thanked the Spanish delegation

for their present of a very valuable book by Dr. LUIS LOZANO Y REY, Spain.

The President addressed Miss REHDER and said that last year had marked the retirement of Miss BRØNNICHE and that next year would mark the retirement of Miss REHDER who had been kind enough to agree to stay a few months of 1954 to assist the coming General Secretary. Miss REHDER had served the Council for nearly 30 years and was, like Miss BRØNNICHE, one of the pillars of the Council. The Council had resolved to present Miss REHDER with a gift of 750 kroner.

The President thought that all those present would like to show their appreciation of the efforts made by the General Secretary and all the office staff to secure the smooth running of what he thought had been a very good meeting.

Finally he reminded the meeting that the General Secretary would be leaving the Council on 31 December 1953, and he wished to emphasize the great debt which the Council owed to Mr. VILLY DESSAU, for the services he had rendered particularly in the organization of the office, which he would hand over in a first class state to his successor.

The meeting closed at noon.

APPENDIX

Statement of the Advice offered to the President of the Permanent Commission set up under the 1946 Fishery Convention, in compliance with a request received from that Commission.

The following material advice is offered by the President of the International Council for the Exploration of the Sea for transmission to the President of the Permanent Commission of the 1946 Fishery Convention in reply to the latter's letter of 12. June 1953.

With regard to the northern stocks of cod, haddock and plaice in the North-Western Area of the International Council, i. e., the region west of North-Eastern Area (see below) including Greenland waters and south to the latitude of Rockall, it is advised that, in the light of the scientific evidence now available and the imminent introduction of the 110 mm. mesh regulation it is not now possible to provide an unqualified answer. Further research must be carried out and an assessment of the position will be provided by the Council at the earliest possible moment.

For the North-Eastern Area of the Council, i. e., the area having as its western boundary the 1000-metre line, and as its southern the 200-metre line as far as the Wyville Thomson Ridge and the Skagerak, the opinion is that, on the scientific evidence available at the present moment it would not be proper to recommend any further conservation measures in this area. The information available does suggest, however, that this matter should be kept continually under review. The Sub-Committee of the International Council in this area had in mind not only the suitability of the 110 mm. mesh size, but also, particularly in view

of the significance of past climatic changes to the fishery in the area, that the relationship between the fishing effort being exerted and the stocks available should be watched carefully. It is earnestly hoped that from time to time the Council will have an opportunity of expressing their views on this vital subject.

In connexion with the request for advice as to the desirability of extending the provision of the 1946 Convention southward from Lat. 48° N. to 36° N. the Atlantic Committee of the International Council whose area covers: a) the European Slope—from the latitude of Rockall to that of Gibraltar; b) the African Slope—from the latitude of Gibraltar to the Equator, is in favour of this and would even favour an extension of the provisions of the Convention down the west African coast as far as Senegal as these grounds are thought to be depleted. In the Atlantic Committee's areas it is thought that there is a depletion of the stock of hake which ought to be arrested by appropriate means as soon as possible. The stocks of sole, however, are not considered to be over-exploited.

In order to deal effectively with any problems or enquiries which may be addressed by the Commission to the Council and in order to obtain expeditious action relating to them the Council has set up a special Liaison Committee, which will be empowered to consider and answer in the light of the evidence available to them these and any future questions.

Resolutions passed by the 41st Statutory Meeting, 1953.

Designation: C. Res. 1953/1:

Increase of the Council's Staff by an assistant in the Hydrographic Department.

Designation: C. Res. 1953/2:

Amendments of the Statutes:— *vide* report of First Meeting of Delegates, Agenda, Point 10.

Designation: C. Res. 1953/3:

That the following Special Meetings should be held at the 1954 Council Meeting:—

- a) Oyster and Mussel Culture.
Convener: Dr. B. HAVINGA; Rapporteur: Dr. H. A. COLE. (To be held towards the end of the Council Meeting).
- b) The Problems and Methods of Sampling Fish Populations.
Convener: Mr. G. ROLLEFSEN; Rapporteur: Mr. B. B. PARRISH (or another at discretion of Mr. ROLLEFSEN).
- c) Herring Tagging Techniques and Results.
Convener: Dr. W. C. HODGSON; Rapporteur: Mr. O. AASEN.

Designation: C. Res. 1953/4:

That the Chairman of the Consultative Committee should consult with Area Chairmen with a view to providing extra time for the Special Meetings mentioned above.

Designation: C. Res. 1953/5:

a) Publication of Echo-Sounding Work on Fish:— That six or seven experts should be summoned to meet the Chairman of the Herring Sub-Committee in Copenhagen in March in order to collect or select suitable papers on echo-sounding results so that they may be published in a special number of the *Rapports et Procès-Verbaux*.

b) Proceedings of the Special Scientific Meeting on Cod:— That the contributions to the meeting be published as a special report in the *Rapports et Procès-Verbaux*.

c) Rapport Atlantique:— That in view of the number of papers offered to the Atlantic Committee these should be published in a Rapport Atlantique.

Designation: C. Res. 1953/6:

To approve the action taken as a result of the request for advice received by the President of the Council from the President of the Permanent Commission of the 1946 Fishery Convention:— An advice having been agreed to, a Liaison Committee should be formed consisting of the Chairman of the Consultative Committee as Chairman together with the Chairmen of the North-Eastern, North-Western, North Sea and Atlantic Committees with power to co-opt.

Designation: C. Res. 1953/7:

To submit the following proposals on conservation of the stocks of salmon in the Baltic to the Royal Danish Government for consideration and transmission to the Governments of Sweden, Finland and Germany:—

- a) Prohibition of the use of drift-lines in the months of December—March.
- b) Establishment of a minimum size for salmon landed of at least 50 cm., but preferably 55 cm.
- c) Establishment of a minimum size for the mesh of salmon drift-nets so that when the mesh is stretched diagonally lengthwise of the net a flat gauge 160 mm. broad and 2 mm. thick shall pass through it easily when the net is wet.
- d) Establishment of a minimum size of 19 mm. for the gap (least distance between point and shank) of the hooks of the drifting and anchored lines used in the salmon fishery.

Designation: C. Res. 1953/8:

Languages to be used in the Council's Publications:—

That for all publications of the Council outside the *Journal du Conseil* English and French shall remain the official languages. In the case of the *Journal du Conseil* German and Spanish will also be accepted when it appears the most effective way of publishing contributions but in the case of such articles there shall be a summary in either English or French and the captions and legends in diagrams and tables shall be translated into either English or French.

Designation: C. Res. 1953/9:

That a cordial acceptance should be given to the French Government's invitation to hold the 42nd Statutory Meeting in Paris from Monday 4 October, to Tuesday 12 October 1954.

Approved Budget for the Financial Year ¹/₁₁ 1953—³¹/₁₀ 1954.

EXPENDITURE			RECEIPT		
	D. c r.	D. kr.		D. kr.	D. kr.
I. Incidentals			I. Contributions		
1. President	1,000.00		Belgium	20,000.00	
2. Chairmen	25,700.00	26,700.00	Denmark	20,000.00	
			Finland	10,000.00	
II. Salaries			France	40,000.00	
1. General Secretary	15,000.00		German Federal Republic	40,000.00	
Administrative Department:			Iceland	20,000.00	
2. Assistant	10,148.64		Ireland	15,000.00	
3. Part Time Stenographer	4,000.00		Netherlands	20,000.00	
Hydrographical Department:			Norway	20,000.00	
4. Hydrographer	18,501.24		Portugal	15,000.00	
5. Additional Staff	9,000.00		Spain	20,000.00	
6. Assistant	8,924.04		Sweden	20,000.00	
7. Part Time Assistant	3,450.00		United Kingdom	40,000.00	300,000.00
8. Part Time Assistant	3,450.00				
Information Department:			II. Interest		
9. Assistant Secretary (Miss M. C. REHDER) 1.11.53—31.5.54 ...	8,165.01		On Bank Deposits	1,500.00	
10. Assistant Secretary (Mr. ULF KJÆR HANSEN)	10,116.38		On Investments	4,468.50	
11. Assistant	8,924.04		On Pension Fund	4,873.50	10,842.00
Statistical Department:			III. Sale of Publications		18,000.00
12. Statistical Secretary	11,357.09	111,036.44			
III. Office Expenses		23,439.60			
IV. Travelling Expenses		13,800.00			
V. Publications		85,185.00			
VI. Pensions ¹⁾		27,422.25			
VII. Contingencies		6,000.00			
Excess of Income over Expenditure		35,258.71			
		<u>328,842.00</u>			<u>328,842.00</u>

¹⁾ The difference between the amount of pensions and the sum of interest yielded by the Pension Fund will be paid as a subvention to the persons concerned.

List of Members of Committees.

(One member, only, from each country is entitled to vote.)

Consultative Committee.

Mr. R. S. WIMPENNY, Chairman,
Mr. G. ROLLEFSEN,
Dr. Å. V. TÅNING,
Dr. C. E. LUCAS,
Dr. AA. J. C. JENSEN,
Dr. CHR. HESSLE,
Prof. JEAN LE GALL,
Dr. JUAN CUESTA,
Dr. J. FURNESTIN,

Dr. W. C. HODGSON,
Dr. N. A. MACKINTOSH,
Dr. A. E. J. WENT,
Dr. B. HAVINGA,
Prof. H. U. SVERDRUP.
Prof. T. BRAARUD,
Dr. N. ROSÉN,
Mr. J. R. LUMBY.

Editorial Committee.

The Chairman of the Consultative Committee, the Editor of the *Journal du Conseil*,
and the General Secretary.

Northern Seas Committee.

Temporary Chairman: Dr. AA. J. C. JENSEN.

The Chairmanship rotates between the Chairmen of the Sub-Committees.

North-Eastern Area Sub-Committee.

Denmark: Dr. Å. V. TÅNING,
failing him Dr. E. BERTELSEN,
England: Mr. G. TROUT,
Finland: Dr. G. GRANQVIST,
France: Mr. P. DESBROSSES,
failing him Dr. J. ANCELLIN,
Germany: Dr. J. LUNDBECK,
Holland: Dr. B. HAVINGA,
Iceland: Mr. JÓN JÓNSSON,
Ireland: Dr. A. E. J. WENT,
Norway: **Mr. G. ROLLEFSEN, Chairman,**
Scotland: Mr. B. B. PARRISH,
Sweden: Dr. A. R. MOLANDER,
failing him Dr. H. HÖGLUND.

North-Western Area Sub-Committee.

Belgium: Dr. E. LELOUP,
failing him Mr. CH. GILIS,
Denmark: **Dr. A. VEDEL TÅNING, Chairman,**
failing him Dr. PAUL M. HANSEN,
England: Mr. R. S. WIMPENNY,
France: Prof. JEAN LE GALL,
failing him Dr. J. ANCELLIN,
Germany: Dr. A. KOTTHAUS,
failing him Dr. J. LUNDBECK,

Holland: Dr. B. HAVINGA,
Iceland: Mr. JÓN JÓNSSON,
Ireland: Dr. A. E. J. WENT,
Norway: Mr. BIRGER RASMUSSEN,
failing him Mr. FINN DEVOLD,
Scotland: Dr. B. B. RAE,
Sweden: Dr. A. R. MOLANDER.

North Sea Sub-Committee.

Belgium: Dr. E. LELOUP,
failing him Mr. CH. GILIS,
Denmark: Dr. E. BERTELSEN,
failing him Dr. AA. J. C. JENSEN,
England: Mr. R. S. WIMPENNY,
failing him Mr. M. GRAHAM,
France: Dr. J. ANCELLIN,
Germany: Dr. A. BÜCKMANN,
Holland: Dr. B. HAVINGA,
failing him Mr. L. K. BOEREMA,
Iceland: Mr. U. STEFÁNSSON,
Norway: Dr. ALF DANNEVIG,
Scotland: **Dr. C. E. LUCAS, Chairman,**
Sweden: Dr. A. R. MOLANDER,
failing him Dr. H. HÖGLUND.

Transition Area Sub-Committee.

Denmark: **Dr. AA. J. C. JENSEN, Chairman,**
Mr. J. B. KIRKEGAARD,
Germany: Prof. R. KÄNDLER,
Norway: Dr. ALF DANNEVIG,
Prof. JOHAN T. RUUD,
Mr. B. RASMUSSEN,
Sweden: Dr. A. R. MOLANDER,
Dr. N. G. JERLOV,
Dr. H. HÖGLUND.

Baltic Area Sub-Committee.

Denmark: Dr. AA. J. C. JENSEN,
Mr. J. KNUDSEN,
Finland: Prof. E. HALME,
Dr. G. GRANQVIST,
Dr. S. SEGERSTRÅLE,
Germany: Dr. P.-FR. MEYER-WAARDEN,
Prof. R. KÄNDLER,
Sweden: **Dr. CHR. HESSLE, Chairman,**
Mr. S. SAHLIN or Dr. F. KOCZY.

Atlantic Committee.

Belgium: Dr. E. LELOUP,
Mr. CH. GILIS,
Denmark: Dr. Å. V. TÅNING,
Dr. E. BERTELSEN,
England: Dr. C. F. HICKLING,
France: **Prof. JEAN LE GALL, Chairman,**
Mr. R. LETACONNOUX,
Dr. R. DIEUZEIDE,
Dr. J. FURNESTIN,
Mr. H. HELDT,
Mr. J. CADENAT,

France: Mr. E. POSTEL,
Germany: Dr. A. BÜCKMANN,
Ireland: Dr. A. E. J. WENT,
Portugal: Dr. A. DE M. RAMALHO,
Prof. F. FRADE,
Scotland: Dr. C. E. LUCAS,
Spain: Dr. F. NAVARRO,
Prof. E. JIMENO,
Prof. R. MONTEQUI,
Dr. M. MENENDEZ.

European Atlantic Slope Sub-Committee.

Belgium: Dr. E. LELOUP,
Denmark: Dr. Å. V. TÅNING,
Dr. E. BERTELSEN,
England: Dr. W. C. HODGSON,
Dr. L. H. N. COOPER,
France: Prof. JEAN LE GALL,
Mr. H. HELDT,
Dr. J. FURNESTIN,
Mr. P. DESBROSSES,
Mr. R. LETACONNOUX,
Prof. G. TEISSIER,

Germany: Dr. P.-FR. MEYER-WAARDEN,
Prof. R. KÄNDLER,
Ireland: Dr. A. E. J. WENT,
Portugal: Dr. A. DE M. RAMALHO,
Prof. F. FRADE,
Scotland: Dr. J. H. FRASER,
Spain: Dr. F. NAVARRO,
Dr. J. CUESTA, Chairman,
Dr. NAVAZ SANZ,
Dr. F. LOZANO,
Dr. RODRIGUEZ MARTIN.

African Atlantic Slope Sub-Committee.

Belgium: Dr. E. LELOUP,
England: Dr. W. C. HODGSON,
Dr. L. H. N. COOPER,
France: **Dr. J. FURNESTIN, Chairman,**
Prof. JEAN LE GALL,
Mr. J. CADENAT,

France: Mr. E. POSTEL,
Ireland: Dr. A. E. J. WENT,
Portugal: Dr. A. DE M. RAMALHO,
Prof. F. FRADE,
Spain: Dr. F. NAVARRO,
Dr. F. LOZANO.

Pelagic Committee.

Temporary Chairman: Dr. W. C. HODGSON.
The Chairman is appointed each year by the Consultative Committee.

Herring Sub-Committee.

Belgium: Mr. CH. GILIS,
Denmark: Dr. Å. V. TÅNING,
failing him Dr. AA. J. C. JENSEN,
England: **Dr. W. C. HODGSON, Chairman,**
France: Dr. J. ANCELLIN,
Germany: Dr. A. BÜCKMANN,
Holland: Dr. B. HAVINGA,
failing him Prof. BAERENDS,

Iceland: Dr. H. EINARSSON,
Ireland: Mr. E. D. TONER,
Norway: Mr. FINN DEVOLD,
Scotland: Mr. B. B. PARRISH,
Sweden: Dr. H. HÖGLUND,
Hydrographical Consultant: Dr. JOHN B. TAIT,
Plankton Consultants: Dr. J. H. FRASER,
Prof. T. BRAARUD.

Whaling Sub-Committee.

Dr. N. A. MACKINTOSH, Chairman,
 Prof. J. LE GALL, or
 Mr. M. TERRIN,
 Dr. C. E. LUCAS,

Dr. Å. V. TÅNING,
 Prof. J. T. RUUD,
 Mr. G. J. LIENESCH,
 Mr. JÓN JÓNSSON.

Salmon and Trout Committee.

Denmark: Mr. KNUD LARSEN,
 England: Mr. F. T. K. PENTELow,
 Finland: Prof. T. H. JÄRVI,
 France: Mr. R. VIBERT,
 Germany: Prof. R. KÄNDLER,
 Holland: Mr. G. J. LIENESCH,
 Iceland: Mr. T. GUÐJÓNSSON,

Ireland: **Dr. A. E. J. WENT, Chairman.**
 Norway: Mr. L. ROSSELAND,
 Scotland: Mr. K. A. PYEFINCH,
 Spain: Dr. JUAN CUESTA,
 Sweden: Dr. J. HULT,
 Dr. G. ALM.

Shellfish Committee.

Belgium: Dr. E. LELOUP,
 Mr. CH. GILIS,
 Denmark: Mr. E. URSIN,
 England: Dr. H. A. COLE,
 Mr. G. D. WAUGH,
 Finland: Dr. S. SEGERSTRÅLE,
 France: Mr. P. DESBROSSES,
 Mr. R. LADOUCE,
 Germany: Dr. P.-FR. MEYER-WAARDEN,

Germany: Dr. H. MANN,
 Holland: **Dr. B. HAVINGA, Chairman,**
 Dr. P. KORRINGA,
 Ireland: Mr. F. A. GIBSON,
 Norway: Mr. B. RASMUSSEN,
 Portugal: Dr. A. DE M. RAMALHO,
 Scotland: Dr. C. E. LUCAS,
 Dr. H. J. THOMAS,
 Spain: Mr. J. AMENGUAL.

Hydrographical Committee.

Belgium: Dr. E. LELOUP,
 failing him Mr. CH. GILIS,
 Denmark: Mr. HELGE THOMSEN,
 failing him Mr. F. HERMANN,
 England: Mr. J. R. LUMBY,
 Finland: Dr. G. GRANQVIST,
 France: Mr. P. DESBROSSES,
 Germany: Dr. G. BÖHNECKE,
 failing him Dr. G. DIETRICH,
 Holland: Vice-Admiral J. W. TERMIJTELEN,
 failing him Dr. P. GROEN,

Iceland: Mr. U. STEFÁNSSON,
 failing him Dr. H. EINARSSON,
 Ireland: Dr. A. E. J. WENT,
 Norway: **Prof. H. U. SVERDRUP, Chairman,**
 Dr. JENS EGGVIN,
 Portugal: Dr. A. DE M. RAMALHO,
 Scotland: Dr. JOHN B. TAIT,
 Spain: Dr. NICANOR MENÉNDEZ,
 failing him Commander FERNANDO BALÉN,
 Sweden: Dr. B. KULLENBERG,
 failing him Dr. N. G. JERLOV.

Plankton Committee.

Belgium: Dr. E. LELOUP,
 Denmark: Mr. J. GRØNTVED,
 Prof. E. STEEMANN NIELSEN,
 England: Mr. F. S. RUSSELL,
 Mr. R. S. WIMPENNY,
 Finland: Prof. T. H. JÄRVI,
 France: Dr. L. FAGE,
 Prof. F. BERNARD,
 Mlle J. FLEURY,

Germany: Dr. J. KREY,
 Holland: Dr. B. HAVINGA,
 Iceland: Dr. H. EINARSSON,
 Ireland: Dr. A. E. J. WENT,
 Norway: **Prof. T. BRAARUD, Chairman,**
 Mr. KR. FR. WIBORG,
 Scotland: Dr. J. H. FRASER,
 Spain: Dr. J. CUESTA,
 Sweden: Dr. HANS HÖGLUND.

Statistical Committee.

Belgium: Mr. CH. GILIS,
 Denmark: Dr. AA. J. C. JENSEN,
 England: Mr. M. GRAHAM,
 failing him Mr. A. R. MARGETTS or Mr. R. S.
 WIMPENNY,

Finland: Prof. T. H. JÄRVI,
 France: Mr. A. ALLOY,
 Germany: Dr. J. LUNDBECK,
 Holland: Mr. G. J. LIENESCH,
 Iceland: Mr. JÓN JÓNSSON,

Ireland: Dr. A. E. J. WENT,
failing him Mr. F. A. GIBSON,
Norway: Mr. A. ANGERMAN,
failing him Mr. JOHS. SELLEGG,
Portugal: Dr. A. DE M. RAMALHO,

Scotland: Dr. H. WOOD,
failing him Mr. B. B. PARRISH,
Spain: Don MANUEL RODRIGUEZ REY, or
Dr. LUIS BELLÓN,
Sweden: Dr. NILS ROSÉN, Chairman,
Mr. S. SAHLIN.

Finance Committee.

Mr. A. T. A. DOBSON, Chairman,
Mr. G. J. LIENESCH,
Dr. Å. V. TÅNING,
Mr. B. DINESEN,

Dr. B. KULLENBERG,
Dr. E. LELOUP,
Dr. A. E. J. WENT.

Special Sub-Committees.

Sub-Committee on the Faroe Question.

Dr. Å. VEDEL TÅNING, Chairman,
Mr. R. S. WIMPENNY,
Prof. J. LE GALL,
Dr. B. HAVINGA,
Mr. BIRGER RASMUSSEN,
Dr. C. E. LUCAS,
Mr. JÓN JÓNSSON.

Sub-Committee for the Standardization of Zooplankton Methods.

Mr. F. S. RUSSELL, Chairman,
Mr. R. S. WIMPENNY,
Dr. J. H. FRASER,
Dr. H. HÖGLUND,
Mr. K. F. WIBORG.

Comparative Fishing Sub-Committee

meets under the auspices of the North Sea Sub-Committee, with the same membership.

Liaison Committee

in connexion with the Permanent Commission of the 1946 Fisheries Convention.

The Chairman of the Consultative Committee, Chairman,
the Chairman of the North-Eastern Area Sub-Committee,
the Chairman of the North-Western Area Sub-Committee,
the Chairman of the North Sea Sub-Committee, and
the Chairman of the Atlantic Committee.

List of Editors.

Rapports et Procès-Verbaux.....	The General Secretary
Bulletin Hydrographique.....	The Hydrographer
Bulletin Statistique.....	Dr. NILS ROSÉN,
Journal du Conseil	Lt.-Cdr. J. R. LUMBY
Fiches d'Identification du Zooplancton...	{ Dr. G. THORSON,
	{ Mr. F. S. RUSSELL, Co-Editor
Annales Biologiques	Dr. Å. V. TÅNING, until 1 January 1954.
	The General Secretary, from 1 January 1954.

ENGLISH VERSION

Special Scientific Meeting

THE COD

Convener: Mr. G. ROLLEFSEN; Reporter: Dr. P. M. HANSEN.

Mr. ROLLEFSEN welcomed members and guests at the meeting and said, with reference to the procedure, that as the papers had been distributed in good time before the meeting they would be taken as read. He invited the authors to give brief summaries of their contributions emphasizing the salient points. He further suggested that the papers should be dealt with under two headings, (a) inshore and (b) oceanic populations, the general discussion to take place afterwards¹).

As a result of this discussion the following conclusions were formed:—

1. Experiments on cod, in which the effects on

¹) According to Recommendation 4 b of the Consultative Committee the contributions to the meeting will be published in a special number of the *Rapport et Procès-Verbaux* (Vol. No. 136).

growth and related physiological characters of controlled variation in temperature and food should be arranged.

2. Morphological observations on different populations of cod should be carefully recorded for comparison with experimental work.

3. The Special Scientific Meeting on the Sampling of Fish Populations proposed by the North Sea Sub-Committee should be given every support. Its terms of reference should be understood to include an evaluation, not only of methods of collecting and sampling at present in use, but also the methods used for dealing with these samples, and suggestions for the future designed to provide standard information on growth, mortality and recruitment so as to furnish adequate answers to the Permanent Commission of the 1946 Convention.

REPORTS

Report and Recommendations of the Consultative Committee.

Chairman: Mr. R. S. WIMPENNY.

I. Proceedings.

1. The Chairman opened the meeting and expressed his pleasure at Mr. ARNI FRIDRIKSSON having accepted the post of General Secretary and congratulated Dr. HAVINGA on having received the order of Oranje-Nassau.

2. Programme of Proceedings.

In the first sitting the programme was slightly amended; it was agreed that any newly elected Chairman would not take office before 1. November, and it was further pointed out that the period of office stipulated in the Statutes, Rule No. 3, would not be effective before next year.

3. Overfishing. Questions raised by the International Fisheries Convention 1946 (Letter of 12. June 1953).

The Chairman called attention to two important questions in the letter, (a) the conservation of cod, haddock, and plaice in northern waters, and (b) the possible extension of the area; the matter was transmitted for their consideration to the North-Eastern and North-Western Area Sub-Committees and the Atlantic Committee respectively. The Chairmen of these Committees together with the Chairman of the Consultative Committee were asked to consider the questions in the light of the recommendations received from their committees and to draft an answer suitable for submission to the final Council Meeting, if necessary after co-ordination with any recommendation emanating from the Special Scientific Meeting on Cod.

At the second sitting an advice presented by the Chairman was agreed and Recommendation 5 was accepted. (See the advice, Appendix on p. 16.)

4. Progress Report.

a) The Statutes' definition of the General Secretary's duties. It was agreed that in the present conditions with a scientist as General Secretary from 1. January 1954 the definition of his duties as laid down in the Statutes was appropriate and need not be amended as suggested in 1952 (Rapp. et Proc.-Verb. 134, I, p. 35, c.).

b) Publication of papers. At the Chairman's suggestion last year's decision (Rapp. et Proc.-Verb. 134, I, p. 35, 6d) which was not believed to give satisfactory results, was rescinded.

5. Special Scientific Meeting 1953.

In view of the large number of contributions re-

ceived it was decided at the first sitting that some such papers not so nearly concerned with the subject should be referred to the Northern Seas Committee's meeting where they were accordingly read and discussed.

At the second sitting the Convener, Mr. ROLLEFSEN, was complimented on the admirable way in which he had prepared and led the meeting. It was agreed that the papers presented should be published in the Rapp. et Proc.-Verb. (Recommendation 4b).

6. Reports of Committees and Sub-Committees.

The reports and recommendations of the Committees were discussed and passed at the second sitting (Recommendation 1) special emphasis being laid upon those dealing with publications, meetings, and conservation of fish (see Recommendations 2—4 and 6).

Attention was called to a proposal by the Transition and Baltic Sub-Committees regarding preparative work for a new international convention for the protection of the stock of fish in the Baltic.

The Whaling Sub-Committee, it was decided, should continue to function, and meetings should be called together, when necessary, by the Chairman.

The publication of a paper on long-distance salmon migrations, suggested by the Salmon and Trout Committee, was left to the Editor of the *Journal du Conseil*.

Thanks were expressed to Mr. FRIDRIKSSON for his past work as Chairman of the Herring Sub-Committee.

7. Recommendation involving Expenditure.

As a result of the increasing requests laid upon the Hydrographical Department Prof. SVERDRUP said that the Hydrographical Committee had proposed to appoint a new assistant. The proposal was supported by Mr. ARNI FRIDRIKSSON and passed. (See Recommendation 9).

8. Languages to be used in the Council's Publications.

At the first sitting the Chairman asked the members to consider the question of the use of German and Spanish languages in the Council's publications; at the second sitting the question was discussed at some length and Recommendation 7 was adopted.

9. Nominations and Elections.

Dr. A. J. C. JENSEN was appointed Chairman at next year's session for the Northern Seas Committee,

M. J. LE GALL for the Atlantic Committee and Dr. W. C. HODGSON for the Pelagic Committee. The re-election of the following Editors was proposed:— Dr. NILS ROSÉN, Lt.-Cdr. J. R. LUMBY, Dr. GUNNAR THORSON, and Mr. F. S. RUSSELL (see Rec. 8).

Mr. R. S. WIMPENNY was re-elected Chairman of the Consultative Committee.

II. Recommendations¹).

1. General Reports of Committees.

The reports and recommendations of the Committees and Sub-Committees were accepted.

2. Special Meetings.

(C. Res. 1953/3).

It was proposed that the following Special Meetings should be held at the 1954 Council Meeting:—

- a) Oyster and Mussel Culture.
Convener: Dr. B. HAVINGA; Rapporteur: Dr. H. A. COLE. (To be held towards the end of the Council Meeting).
- b) The Problems and Methods of Sampling Fish Populations.
Convener: Mr. G. ROLLEFSEN; Rapporteur: Mr. B. B. PARRISH (or another at discretion of Mr. ROLLEFSEN).
- c) Herring Tagging Techniques and Results.
Convener: Dr. W. C. HODGSON; Rapporteur: Mr. O. AASEN.

3. Conduct of Meetings in 1954.

(C. Res. 1953/4).

It was decided that the Chairman of the Consultative Committee should consult with Area Chairmen with a view to providing extra time for the Special Meetings mentioned above.

4. Publications.

(C. Res. 1953/5).

a) Publication of Echo-Sounding Work on Fish. It was decided that six or seven experts should be summoned to meet the Chairman of the Herring Sub-Committee in Copenhagen in March in order to collect or select suitable papers on echo-sounding results so that they may be published in a special number of the *Rapport et Procès-Verbaux*.

b) Proceedings of the Special Scientific Meeting on Cod. It was decided that the contributions to the Meeting be published as a special report in the *Rapports et Procès-Verbaux*.

c) Rapport Atlantique. In view of the number of papers offered to the Atlantic Committee it was agreed that these should be published in a Rapport Atlantique.

¹) In brackets the official designation as accepted by the General Assembly.

5. International Co-operation.

(C. Res. 1953/6).

As a result of the request for advice received by the President of the Council from the President of the Permanent Commission of the 1946 Fishery Convention an advice was agreed and it was decided to set up a Liaison Committee consisting of the Chairman of the Consultative Committee as Chairman together with the Chairmen of the North-Eastern, North-Western, North Sea and Atlantic Committees with power to co-opt.

6. Conservation of Fish.

(C. Res. 1953/7).

It was decided to recommend that the Council take steps to submit the following proposals on conservation of the stocks of salmon in the Baltic to the Royal Danish Government for consideration and transmission to the Governments of Sweden, Finland and Germany:—

- a) Prohibition of the use of drift-lines in the months of December—March.
- b) Establishment of a minimum size for salmon landed of at least 50 cm., but preferably 55 cm.
- c) Establishment of a minimum size for the mesh of salmon drift-nets so that when the mesh is stretched diagonally lengthwise of the net a flat gauge 160 mm. broad and 2 mm. thick shall pass through it easily when the net is wet.
- d) Establishment of a minimum size of 19 mm. for the gap (least distance between point and shank) of the hooks of the drifting and anchored lines used in the salmon fishery.

7. Languages to be used in the Council's Publications.

(C. Res. 1953/8).

It is proposed that for all publications of the Council outside the *Journal du Conseil* English and French should remain the official languages. In the case of the *Journal* German and Spanish would also be accepted when it appeared the most effective way of publishing contributions but in the case of such articles there should be a summary in either English or French and the captions and legends in diagrams and tables should be translated into either English or French.

8. Re-election of Editors.

The re-election of the following Editors was proposed:— Dr. NILS ROSÉN, *Bulletin Statistique*; Lt.-Cdr. J. R. LUMBY, *Journal du Conseil*; Dr. GUNNAR THORSON and Mr. F. S. RUSSELL, Editor and Co-editor of the *Fiches d'Identification du Zooplancton*.

9. Increase of the Council's Staff.

(C. Res. 1953/1).

The employment of an assistant in the Hydrographic Department.

Reports and Programmes of Committees and Sub-Committees.

Northern Seas Committee.

In the Chair: Dr. C. E. LUCAS.

The papers mentioned below were read and very valuable discussions followed¹⁾:—

O. AASEN: "On the theoretical calculation of the numerical stock strength in fish populations."

G. DANNEVIG: "The feeding grounds of the Lofoten cod."

G. C. TROUT: "Some observations on cod otolith growth in the Barents Sea."

¹⁾ The papers will be published in Rapp. et Proc.-Verb. 136 as appendices to the reports of the Special Scientific Meeting on Cod.

North-Eastern Area Sub-Committee.

Chairman: Mr. G. ROLLEFSEN.

I. Proceedings.

The Chairman opened the meeting and expressed a welcome to the members and experts and to visitors and observers present.

There were no alterations in the list of members.

The administrative report and the *Annales Biologiques* were presented and adopted.

Short reports of current work in the area were given.

A letter to the Council from the President of the Permanent Commission of the 1946 Fisheries Convention submitted by the Consultative Committee was discussed and Recommendation III adopted.

Mr. GUNNAR ROLLEFSEN was re-elected Chairman.

II. Communications.

GUNNAR DANNEVIG: "On tagging technique."

T. A. GULLAND: "On sampling from commercial catches."

G. TROUT: "On cod otoliths."

III. Recommendation.

The North-Eastern Area Sub-Committee is of the opinion that on the scientific evidence available at this moment it would not be proper to recommend any further conservation measures in the area. The information available does suggest, however, that this matter should be kept continually under review. The Sub-Committee has in mind not only the suitability of the 110 mm. mesh size, for instance, but also, particularly in view of the fisheries' significance of past climatic changes in the area, that the relationship between the fishing effort being exerted and the stocks available should be watched most carefully. It is earnestly hoped therefore, that the Council will from time to time have an opportunity of expressing their views on this vital subject.

North-Western Area Sub-Committee.

Chairman: Dr. A. VEDEL TÅNING.

I. Proceedings.

The Chairman welcomed members and guests and especially the observers from Canada and U.S.A.

The list of members was approved subject to the later appointment of a new member from Sweden to replace one who is due to retire in 1954.

The administrative report and the *Annales Biologiques* were adopted by the Committee.

The Chairman was re-elected.

II. Communications.

The following reports were submitted:—

1. From the Faroe area:— Dr. Å. VEDEL TÅNING made a short report especially on Mr. J. S. JOENSEN's cod investigations.
2. From the Iceland area:—
Å. FRIDRIKSSON: "Fisheries investigations in Faxa Bay, 1953."
JÓN JÓNSSON: "Icelandic cod stock 1953."
UNNSTEINN STEFÁNSSON: "Notes on hydrographical conditions in Icelandic waters 1953."
3. From the Greenland area:—
PAUL M. HANSEN: "Fisheries investigations in Greenland waters 1953."
F. HERMANN: "Hydrographical observations in Greenland waters 1953."

III. Programme of Work.

It was agreed that the different countries should carry out the work specialized below, but owing to the fact that several countries had not yet fixed their programme for work at sea during the coming year, it was decided that further details should be arranged by correspondence.

Belgium: Protection ship "Lt. Victor Billet" will carry out hydrographic work and plankton collections in Icelandic waters.

Denmark: The same work at sea will be carried out as in 1953, more time to be spent by the "Dana" in Greenland waters.

England: Continued plankton collections by the Weather Ship "J".

Germany: Cruises with a research trawler to Denmark and Davis Straits in September—October (cod, redfish, hydrography, plankton).

France: Work to be arranged by correspondence.

Holland: No work in the area in 1954.

Iceland: Work will be continued on the same lines as before, *inter alia*, herring tagging off the south coast, Faxa Bay research, hydrography off north Iceland during a whole year, cod investigations on the spawning stock as before, marking experiments and collection of material in Greenland waters.

Ireland: No work at sea in 1954.

Norway: Sampling of cod material from long lines and trawlers in Greenland waters. Herring investigations, hydrography, etc. in the area.

Scotland: Continued work on haddock etc. in the Faroe area. Herring hydrography survey north of Faroe. Perhaps a new research ship will be available.

Sweden: Work to be arranged later on by correspondence.

IV. Recommendations.

1. The North-Western Area Sub-Committee considered the questions posed to the International Council by the Permanent Commission of the 1946 Fisheries Convention about the northern stocks of cod, haddock and plaice. They reached the conclusion that, in the light of the scientific evidence now available and the imminent introduction of the 110 mm. mesh regulation provided for in the Convention, it is not now possible to provide an unqualified answer. They therefore recommended that further research should be carried out and that an assessment of the position should be provided by the Council at the earliest possible moment.

2. The Sub-Committee further recommended that a special Liaison Committee should be appointed by the Consultative Committee, which should be empowered by the Council to consider and answer, in the light of the evidence then available to them, these and any future questions put to the Council by the Commission.

3. The North-Western Sub-Committee agreed in principle that hydrographic observations should be carried out along the section in the open Atlantic indicated in the Proceedings No. 14, pt. 9 (see footnote) of the third annual meeting of the Committee on Research and Statistics of the ICNAF to which attention had been drawn by the Chairman of the Committee.

V. The Sub-Committee on the Faroe Question.

The Chairman, Dr. Å. VEDEL TÅNING reported on the work in progress, especially that carried out on cod during the year by Mr. J. S. JOENSEN at the annexe laboratory in Thorshavn. It has been shown that the 1947 year-class is of very great importance. This will be of great help in the elucidation of the Sub-Committee's researches. In recent years the situation of the spawning places north and west of the islands

"That the European countries, and the United Kingdom in particular, be requested to undertake a section approximately from the south-west of Ireland to a position about 51° N.Lat., 31° W.Long., to a depth of 500 m. and in some stations to at least 1000 m."

has been found to be farther out in deeper water, in the northern area actually outside the area, which Faroe fishermen have agreed to as a closed area. Also the statistical data available from post-war years were discussed.

As the work on the question is likely to continue for several years in accordance with the programme

agreed upon in 1948 (see Rapp. et Proc.-Verb. Vol. 124, p. 37, Rec. 1), results on which a proposal can be based will first be obtained later on. It was agreed that the question should be considered again next year.

The members promised to procure some material of interest to the Sub-Committee, especially statistical data from English trawlers.

North Sea Sub-Committee.

Chairman: Dr. C. E. LUCAS.

I. Proceedings.

The Chairman opened the meeting by welcoming the experts of the countries represented on the Sub-Committee, and the various visitors who were present. A record of attendance showed that all the member countries were represented.

The Sub-Committee had before them advance copies of the administrative report and the *Annales Biologiques*. These were considered to provide a satisfactory record of activities during the previous year, and members were asked to inform the Chairman or the Secretariat as soon as possible of any detailed corrections or amendments considered necessary before final printing.

The Sub-Committee wished to place on record their appreciation of the new arrangement made by the Council's office for the circulation of documents etc., before and at the beginning of the meeting. They were evidently going to be of great assistance to members.

Dr. C. E. LUCAS was re-elected as Chairman.

II. Communications.

One paper (by J. A. GULLAND) had been submitted concerning the work of the Sub-Committee proper, and four others for the Comparative Fishing Sub-Committee, as follows:—

J. A. GULLAND: "The sampling variance in measurements from commercial fish landings."

C. E. LUCAS, A. RITCHIE and B. B. PARRISH: "Mesh selection in the round fish seine."

M. GRAHAM, R. J. H. BEVERTON, A. R. MARGETTS and J. A. GULLAND: "A note on published trawler/seiner comparisons."

A. R. MARGETTS: "The length and girth relationship in haddock and its application to mesh selection."

M. GRAHAM, A. R. MARGETTS and J. A. GULLAND: "Some trials of seines and trawls in 1953."

III. Programme of Work.

Advance copies of the draft scientific programmes of France, Norway, England and Scotland were available for members and arrangements were made for other countries intending to work within the North Sea to provide copies of their draft programmes for circulation as soon as possible.

IV. Recommendation.

It was agreed that the Consultative Committee be requested to arrange, for the meeting in 1954, a Special Meeting on "The problems and methods of sampling in the commercial sea fisheries, both demersal and pelagic".

Transition Area Sub-Committee.

Chairman: Dr. A. J. C. JENSEN.

I. Proceedings.

Advance copies of the administrative report and the *Annales Biologiques* for 1952 were submitted to contributors for proof correction.

The effect of the 1946 International Fisheries Convention (especially of the minimum limit for whiting) on fisheries in the area was discussed.

It was agreed that a new international convention for the Baltic was desirable. Mr. J. KNUDSEN was

asked to work up the results of investigations into the flatfish concerned and the cod.

Dr. A. J. C. JENSEN was re-elected Chairman.

II. Communications.

E. BERTELSEN and J. KIRKEGAARD: "A new marking method for plaice."

J. KIRKEGAARD: "On the transplantations of plaice."

R. KÄNDLER: "Über das Laichen der Makrele (*Scomber scombrus* L.) in der Kieler Bucht."

A. DANNEVIG: "Short communication on the rearing experiments of salt water fish."

B. RASMUSSEN: "On the protection of the deep-sea prawns in the outer Oslofjord."

III. Programme of Work.

The programme of the previous year was re-adopted, special attention to be given to:—

1. A more exact determination of the quantities of the various species of fish caught for processing.

2. The effect of the fishery for processing on the stocks of fish for human consumption should be investigated especially with a view to the possibility

of recommending that some of the whiting captured in the herring, sprat, and deep-sea prawn fisheries should be exempt from the size limits imposed by the International Fisheries Convention of 1946.

3. Marking of cod using uniform methods should be carried out in the coming year in co-operation between the different countries.

4. Information relating to the catch per fishing unit should be collected from the commercial fisheries.

5. Determinations of phosphates and nitrates should be extended as far as possible.

6. Investigations should be made on the fishery of the deep-sea prawn at different seasons of the year with the cod-end closed either by a knot or by lacing.

7. The spawning places of the mackerel should be investigated through international co-operation.

Baltic Area Sub-Committee.

Chairman: Dr. CHR. HESSLE.

I. Proceedings.

The Chairman opened the meeting and welcomed the members and visitors.

The desirability of a new convention being established for the protection of the stock of fish in the Baltic was discussed and supported by the members.

Mr. J. KNUDSEN was asked to collate recent results of investigations on the stock of fish in the Baltic to serve as a basis for a discussion at next year's meeting of international regulations of the fishery, especially of flatfish and cod in the Baltic.

Dr. CHR. HESSLE was re-elected Chairman.

II. Communications.

The following reports were presented and discussed:—

N. JERLOV: "The suspended matter in the Bothnian Sea."

J. KNUDSEN: "Remarks on the flatfish around Bornholm."

G. ALM: "A survey of the Baltic salmon fishery and the stock of salmon in recent years."

In connexion with Dr. ALM's report the recommendation below was accepted.

III. Programme of Work.

It was agreed to re-adopt this year's programme as that of the coming year.

IV. Recommendation.

As the proportion of small salmon in the catches of the Baltic has increased considerably in recent years, mainly as a result of the use of drift-lines with small hooks and as the prices obtained for such fish are relatively low and their capture is likely to be detrimental as far as the maintenance of the salmon stocks is concerned, the Baltic Committee considers that certain steps must be taken immediately to protect the stocks of salmon in this area. It recommends, therefore, that the following measures should be adopted by the countries concerned:—

1. Prohibition of the use of drift-lines in the months of December—March.
2. Establishment of a minimum size for salmon of at least 50 cm., but preferably 55 cm.
3. Establishment of a minimum size for the mesh of salmon drift-nets so that when the mesh is stretched diagonally lengthwise of the net a flat gauge 160 mm. broad and 2 mm. thick shall pass through it easily when the net is wet.
4. Establishment of a minimum size of 19 mm. for the gap (least distance between point and shank) of the hooks of the drifting and anchored lines used in the salmon fishery.

Atlantic Committee.

Chairman: Professor JEAN LE GALL.

I. Proceedings.

1. No change was suggested in the general composition of the Committee.

2. The administrative report was accepted.

3. *Annales Biologiques*. The Atlantic Committee expressed its regret once more at having found that various notes and papers, presented by the Chairmen of the Atlantic Committee and the European and African Slope Sub-Committees and intended for the *Annales Biologiques*, had not been accepted for publication in the *Annales*, but had been transferred to the *Journal du Conseil* without definite limit for their appearance.

4. Overfishing. The Atlantic Committee and the European and Atlantic Slope Sub-Committees having considered the questions submitted to the Council by the 1946 Fisheries Convention, adopted Recommendation IV, a—c.

5. Publication of Reports. The Committee discussed the available possibilities for publishing the reports presented and agreed to the following recommendations:—

a) The Atlantic Committee and the two Sub-Committees of the European and African Atlantic Slope recommended that authors should not send to the Chairmen of the mentioned Committees any papers for presentation at meetings of the Council, other than original reports; they should not give detailed results of well known investigations of old standing, but results of continued observations during a relatively short series of years, such results being actually intended for the *Annales Biologiques*.

b) The above-mentioned Committees expressed the hope that the reports presented and accepted could be published in the *Journal du Conseil* before the next general assembly, and should appear under three headings, clupeids, tunnies, and hake, each one comprising all reports presented under the respective headings.

6. Prof. JEAN LE GALL was re-elected Chairman.

II. Communications.

A. Clupeids.

E. POSTEL: "Summary of our knowledge of the clupeids of western Africa."

M. ROSSIGNOL: "The *Sardinella* of the Pointe-Noire region."

B. ANDREU: "The relation between the number of gill rakers and size in Spanish anchovy from the Atlantic coast."

F. LEFÈVRE: "Observations on the spawning of pilchard on the west coast of Finisterre."

Mrs. M.-L. FURNESTIN: "Spawning of pilchard and anchovy in Moroccan waters."

J. CADENAT and R. MOAL: "Note on the pilchard (*Sardina pilchardus* W.) in the region of Cap Blanc, Mauretania."

The following took part in the discussion:— Messrs. CADENAT, CUESTA, FURNESTIN, J. LE GALL, LETACONNOUX, LOZANO, and RAMALHO.

B. Scombrids, Tunny.

E. POSTEL: "Contribution to the study of tunnies in the tropical Atlantic."

JEAN MORICE: "A systematic essay on the families of scombroid fishes, i. e., Cybiidae, Thunnidae, and Katsuwonidae."

JEAN MORICE: "A systematic character for distinguishing the species of the Atlantic Thunnidae."

F. FRADE and E. POSTEL: "Contribution to the study of the reproduction of tunnies (southern latitude of the tropical Atlantic)."

J. LE GALL and G. LEFÈVRE: "Eggs and larvae of tunnies caught during the cruises of the 'Président Théodore Tissier'."

MESSRS. FRADE, FURNESTIN, LE GALL, and HELDT took part in the ensuing discussion.

C. Hake. (3rd Colloquy).

R. LETACONNOUX: "Report on the hake."

R. LETACONNOUX: "Note on *Merluccius bilinearis* (MITCHILL)."

CL. MAURIN: "Fifth note on the hake of the Moroccan coasts."

J. CADENAT: "Remarks concerning *Merluccius senegalensis*."

E. POSTEL: "The black hake (*Merluccius senegalensis* CADENAT)."

K. T. HOWARD, N. B. MARSHALL, and R. S. WIMPENNY: "A voyage to the black hake grounds off the West African coast." (Already presented to the African Slope Committee.)

The reports were discussed and Messrs. CADENAT, FURNESTIN, LETACONNOUX, and RAMALHO contributed to the discussion.

III. Programme of Work.

The work carried out during 1952/53 was discussed and the programme of work for 1953/54 was adopted.

IV. Recommendation.

Overfishing. The Atlantic Committee, which had been asked to give their scientific advice as to the desirability of extending the provisions of the 1946 Fisheries Convention southward from the latitude of Penmarch, (the present southern limit) to that of Gibraltar (proposed southern limit), discussed the subject and made the following recommendations:—

a) The Atlantic, European, and African Slope Committees are of the opinion that the southern limit of the provisions of the 1946 Convention should be extended progressively to the latitude of Gibraltar as from 1. Januar 1955.

b) Investigations on the western coasts of Africa (Morocco, Mauretania, Senegal), on the depletion of the stock of commercial fish by overfishing by trawlers, induced the Committees to call the attention of the interested countries to this depletion in order that a

remedy might be considered as soon as possible, i. e., the possible extension of the 1946 Convention to the mesh size of the trawl and to the marketable size of commercial fish on that coast.

c) According to recent years' investigations into the sole fishery it is not thought that there is a depletion of the stock of soles. But the depletion of the stock of hake ought to be arrested by appropriate means—otherwise it may be too late and beyond remedy.

European Atlantic Slope Sub-Committee.

Chairman: Dr. J. CUESTA,

I. Proceedings.

No change in the composition of the Committee. The administrative report was adopted.

The members of the Committee reported on the work carried out in their respective countries.

In reply to a question by Prof. LE GALL the Committee agreed that the reports rejected by the editor of the *Annales Biologiques* should be published in the *Journal du Conseil*.

Dr. J. CUESTA was re-elected Chairman.

II. Communications.

The following papers were read and discussed:—

J. R. LUMBY: "The common octopus and sea temperature."

R. MOLINIER and J. PICARD: "Mapping of the marine Mediterranean populations (flora, sessile fauna and fauna of slight mobility)."

J. M. PÉRÈS and J. PICARD: "Biotopes and biocoenoses of the western Mediterranean compared with those of the north-eastern Atlantic and the Channel."

III. Programme of Work.

The work in hand is to be continued during the next year. Prof. LE GALL emphasized the necessity of observations being exchanged between investigators as soon as they were available—as it had been agreed at the meeting in 1951. Dr. RAMALHO suggested that sardine scales should be exchanged by the workers.

African Atlantic Slope Sub-Committee.

Chairman: Dr. J. FURNESTIN.

I. Proceedings.

Dr. J. FURNESTIN was re-elected Chairman.

II. Communications.

W. GEIGER: "Use of varnish in studying the morphology of fishes, especially in determining the body surface."

CH. ROUX: "Work of the oceanographical center at Pointe-Noire" (A.E.F.)."

J. COLLIGNON: "Hydrographical observations on the surface water in the Pointe-Noire region."

E. POSTEL: "Hydrological observations off the coasts French western Africa."

E. POSTEL: "The bionomical aspect of the coasts of French Guinea."

M. DELAIS: "Note on *Liza dumerili* STEIN and *L. hoeferi* ST."

J. CADENAT: "On the mullet of the western coast of Africa."

R. GAIL: "New observations on *Trachurus picturatus* BOWD."

K. T. HOWARD, N. B. MARSHALL, and R. S. WIMPENNY: "A voyage to the black hake grounds off the West African coast."

III. Programme of Work.

The difficulties of communication between the various centres of research established on the Atlantic coast of Africa stimulate the members of the Sub-Committee present at the meeting to renew the wish, expressed in 1952, that the experts working in Africa should meet in 1954, in an African town, in order to compare their results and to prepare common programmes. The meeting is to be sponsored by the International Council and to be convened by the Chairman of the African Sub-Committee.

Pelagic Committee.

In the Chair: Mr. ÁRNI FRÍÐRIKSSON; Reporter: Dr. W. C. HODGSON.

The Chairman opened the meeting with an address of welcome and then called on M. LE GALL to introduce the film on "The Biology of the Eel" which had been prepared by Prof. M. FONTAINE for the Ministry of National Education. Owing to illness, Prof. FONTAINE was unable to be present, so the film was presented on his behalf by Prof. J. PÉRÈS. At the end of this excellent film the Chairman asked M. LE GALL to convey the thanks of the meeting to Prof. FONTAINE.

Then followed the papers mentioned below on the various aspects of echo-sounding and its application to fisheries:—

- P. A. DE BOER: "Reliability and efficiency of the echographs in use in the Netherlands fisheries."
R. E. CRAIG: "The use of the echometer in fish-location—a survey of present knowledge with notes on the use of Asdic."
D. H. CUSHING & I. D. RICHARDSON: "Echo-sounding experiments on fish."
B. B. PARRISH: "A proposal for the introduction of organized echo-search in North Sea herring investigations."

In addition Dr. J. FURNESTIN presented his recent report on echo-sounding and the sardine fishery in Morocco and M. LETACONNOUX told of his experience with echo-sounding in the tunny fishery of the Atlantic, and said that while it had not been possible to locate the fish directly, he had succeeded in locating the food of the tunny (squids etc.) and thereby in finding the fish indirectly.

Dr. HODGSON said it had been intended to discuss echo-sounding and Asdic, but unfortunately there had been no Asdic contributions. In every member country of the Council echo-sounding is in use in its

fisheries and the relative number of fishing vessels which are equipped ranges from about 20—95 % of all vessels in the fishing fleets. Almost every size of vessel may be equipped with echo-sounders in connexion with any gear used and many species are being hunted by means of this new weapon.

There are a very great number of echo-sounding machines in use at the present time and designs are gradually being improved now that it is realised by manufacturers that the sounder has become an almost indispensable part of the fishermen's equipment. During the last two or three years a considerable mass of material on this matter has been collected from countries all over the world and this should, it is considered, be compiled and published for the benefit of all concerned.

During this meeting several very valuable additions have been made to our knowledge of the subject, and the trends have been to show firstly, how the sounder itself might be improved and secondly how their use might be improved for the general benefit of the various fisheries.

Finally, in connexion with the publication already mentioned, it is suggested to ask the Members to consider the following proposal:—That the Herring Sub-Committee recommends that four or five specialists should be appointed in order to prepare the available material on echo-sounding and Asdic for publication, and that funds be provided for a special issue in the *Rapp. et Proc.-Verb.* during the next financial year.

In conclusion, the Chairman wished to place on record the fact that members of the Pelagic Committee and the Herring Sub-Committee wished to acknowledge the assistance which has been derived from the Service Hydrographique.

Herring Sub-Committee.

Chairman: Mr. ÁRNI FRÍÐRIKSSON.

I. Proceedings.

The list of members was checked and some amendments accepted.

The administrative report and the *Annales Biologiques* were presented and adopted.

The plans for the research work in 1954 were discussed.

Dr. W. HODGSON was elected Chairman.

II. Communications.

OLAV AASEN: "Tagging of herring at Iceland and Norway in 1953."

B. HAVINGA: "Statistics of North Sea herring." (Read by L. K. BOEREMA).

Reports on some aspects of the research work in 1953 by their countries were given by F. DEVOLD, E. BERTELSEN, Á. FRÍÐRIKSSON, A. BÜCKMANN, J. ANCELLIN, B. B. PARRISH, H. HÖGLUND, and W. C. HODGSON.

III. Programme of Work.

1. Northern Seas. Countries working in this area will continue their work as in the preceding year and will co-ordinate their plans. Scotland will, if possible, extend their cruises to the winter also, and

Iceland will equip their research vessels with an Asdic outfit. Sweden will probably not be able to participate in the work.

2. North Sea. The countries concerned will continue the work along the same lines as before, except Norway which will extend the search for herring during the winter, and in the tagging work "Forfangst sild" will also be included.

The Chairman was authorized to contact the countries concerned in order to make them conform to a common plan in the research work in the southern North Sea.

IV. Recommendations.

1. In view of the wide interest and importance of the results of the European herring tagging experiments it is recommended that a meeting should

be held in 1954 at which countries participating in this work should present the results of their investigations since 1945.

2. It is recommended that 4 or 5 specialists be appointed by the Herring Sub-Committee who should be asked to prepare the available material on echosounding and Asdic for publication and that funds be provided during the next financial year for a special issue on the matter in the series *Rapport et Procès-Verbaux*.

3. It is further recommended that the Chairman of the Herring Sub-Committee should consult all countries interested in herring fishing with a view to co-ordinating all information obtained from echometer surveys carried out in the North Sea by research vessels and any data which may be obtainable from other vessels using echometers.

Whaling Sub-Committee.

In the Chair: Mr. A. T. A. DOBSON.

1. A meeting of the Whaling Sub-Committee was held, and in the regrettable absence through illness of Dr. MACKINTOSH (U.K.) Mr. DOBSON, (Secretary of the International Whaling Commission) was asked to take the Chair.
2. There were present: Dr. LIENESCH (Holland), the Vice-Chairman of the International Whaling Commission, Professor LE GALL (France), Mr. BIRGER BERGERSEN and Dr. RUUD (Norway), Dr. RAMALHO (Portugal) and Mr. R. G. R. WALL (U.K.), with observers.
3. Mr. DOBSON gave a brief résumé of the operations of the International Whaling Commission throughout its first 4 years, and he called special attention to the recommendations of the Commission passed at the 5th meeting in June 1953, which it is hoped would come into operation as from the 8th of October.
4. Dr. RUUD gave a résumé of the arrangements

which had been made for a special Whaling Marking Expedition at the end of this year to precede the pelagic season which opens on 2. January, 1954. Great satisfaction was expressed at the arrangements outlined.

5. Dr. RUUD also summarized the other scientific work which was being done by various countries, which had been outlined by Dr. MACKINTOSH in a paper presented to the International Whaling Commission at its meeting above mentioned.
6. The Committee considered whether it was necessary for the Whaling Committee of the Council to continue to function, and they finally decided that the present arrangement should continue, under which the Committee should be called together when necessary by the Chairman.
7. Dr. MACKINTOSH was confirmed as Chairman of the Committee.

Salmon and Trout Committee.

Chairman: Dr. A. E. J. WENT.

I. Proceedings.

The Chairman welcomed the members of the Committee and guests. The list of members was read and checked.

Dr. ARTHUR E. J. WENT was re-elected Chairman of the Committee.

II. Communications.

Reports on the results obtained since the previous meeting from tagging and marking of salmon and trout were made by Mr. LARSEN (Denmark), M. VIBERT (France), Mr. GUDJÓNSSON (Iceland), Mr. ROSSELAND (Norway), Mr. PYEFINCH (Scotland), Dr. ALM

(Sweden) and the Chairman (Ireland). The Chairman also reported on the results of the tagging along the coast of Northern Ireland which were of general as well as local interest, and the view was expressed that this work should continue in future years.

A discussion ensued on the results of the programme of tagging of clean salmon in the sea and it was resolved that the Chairman should prepare a short paper on the long-distance salmon migrations recorded to date for publication in *Annales Biologiques* or some other suitable publication of the Council. The question of the limits to be imposed (200, 400 and 500 kilometres were suggested) was also discussed and it was resolved to leave this matter to the Chairman.

Dr. ALM reported that he had communicated a paper to the Baltic Sub-Committee on the subject of the necessity to impose restrictions on the capture of

salmon in that region. The Baltic Sub-Committee had approved of Dr. ALM's suggestions which would be discussed by the Consultative Committee.

It was suggested that during the 1954 meeting in Paris arrangements should be made for a visit by the Committee and other interested persons to trout hatcheries in the vicinity of Paris and if possible to the Laboratory for Salmon Research in Biarritz. The arrangements for such visits to be left to the Chairman and M. WIBERT.

III. Programme of Work.

The Committee resolved that the salmon and trout tagging programme should be continued with special emphasis on tagging of clean fish in the sea and of smolts. It was left to each country to arrange its researches within the framework of the original programme laid down in 1946 at Stockholm.

Shellfish Committee.

Chairman: Dr. B. HAVINGA.

I. Proceedings.

The Chairman welcomed the members of the Committee and the visitors.

As the members of the Committee had not yet had the opportunity to look through the administrative report and the *Annales Biologiques* it was requested that remarks should be sent to the Chairman later on.

It is expected that the next Council Meeting will be held in France. This country is the largest oyster producer in Europe and culture techniques have reached an advanced stage of development. The Chairman said that the meeting in France would give a unique opportunity for a general review of the progress of oyster and mussel cultures. He suggested that guests from outside the boundaries of the Council should be invited to a special meeting.

M. P. DESBROSSES said he was much in favour of such a meeting and that he was convinced the French Government would give full assistance.

Dr. H. A. COLE suggested that the Shellfish Committee should make renewed attempts to arrive at some standardization of methods of bacteriological analysis of shellfish and as a preliminary asked that the Chairman should seek information from members regarding the methods at present in use and the standards applied. This suggestion was agreed.

Dr. B. HAVINGA was re-elected Chairman.

II. Communications.

Shellfish Progress Report 1953. *Mytilicola intestinalis* STEUER in England and Wales.

E. LELOUP: "Sur la répartition de *Mytilicola* le long de la côte belge."

E. LELOUP: "Caractères biométriques des *Nephrops* débarqués à la minque d'Ostende."

H. J. THOMAS: "The distribution of *Mytilicola intestinalis* (STEUER) in Scotland."

H. J. THOMAS: "Some observations on the distribution, biology and exploitation of *Nephrops norvegicus* in Scottish waters."

H. J. THOMAS: "The efficiency of the Cornish pot and the Scottish creel in the capture of lobsters and crabs."

III. Programme of Work.

The programme of shellfish research for 1954 in the different countries was discussed. It was agreed to continue to provide information on the biology of *Nephrops norvegicus* and *Pecten maximus*.

IV. Recommendation.

The Shellfish Committee recommends that a special meeting to review progress in oyster and mussel culture should be held during the next Council Meeting; experts from outside the boundaries of the International Council should be invited to attend at their own expense. The meeting should not interfere with the regular Committee meetings. The meeting should be followed by a short tour of productive centres of shellfish culture.

It is requested that the International Council should authorize and sponsor this meeting.

Hydrographical Committee.

(Chairman: Prof. H. U. SVERDRUP.

I. Proceedings.

The revised list of members was adopted.

The administrative report for 1952 was approved.

Dr. CARRUTHERS reported on the work of the Sub-Committee for procuring Regular Current Data and proposed the Sub-Committee to be dissolved, as it had now fulfilled its task.

This was agreed.

The Chairman expressed the thanks of the Hydrographical Committee for the excellent manner in which the Sub-Committee had completed its work.

The Hydrographer reported on the work carried out in the Service Hydrographique of the Council in the past year.

In this connexion the Chairman informed the members about the reasons for working out the herring-hydrographical charts in the Service Hydrographique.

The Chairman stressed the desirability of having more assistance in the Service Hydrographique, as the work to be carried out had increased much in recent years. He was of the opinion that hydrographical data lent themselves more easily to treatment at a central office than did the biological data. Recommendation 1 was carried.

The Chairman informed the members that the Plankton Committee had submitted the following statement:—

"The Plankton Committee wishes to convey to the Hydrographical Committee their appreciation of the value of the *Synoptic Hydrographic Charts* which they find most useful".

The Chairman drew attention to the lack of monthly mean charts of temperature and salinity for the area covered by the *Synoptic Hydrographic Charts*.

Cdr. LUMBY intended to pull together the information given in existing charts. This would, however, mean a temporary help only. Recommendation 2 was carried.

The recommendation is based on the fact that increased routine work, due to the great expansion of the data to be published in the *Bulletin Hydrographique* and to be entered on cards, as well as to the preparations of the monthly surface charts, demands the full attention of the Hydrographer and his staff. Thus, the Hydrographer is unable to devote any time to the consideration of special problems and special requests, or to have special assignments dealt with by the staff.

Cdr. LUMBY stressed the usefulness of the work on temperature variations carried out in the Service Hydrographique.

Preliminary plans for hydrographic work in the various countries in 1954 were tabled.

Cdr. LUMBY pointed to the desirability of having the final programmes distributed at a later date, for the purpose of a better co-ordination of work at sea.

No action was taken on this suggestion, which will be made the subject of further consideration.

The Hydrographer presented a survey of routine observations carried out along fixed lines or at fixed stations by research and commercial vessels, lightships etc.

The Chairman raised the question about an improvement of meeting technique.

It was unanimously agreed that the Chairman should bring up the point in the Consultative Committee.

Professor SVERDRUP was re-elected Chairman.

II. Communications.

The following lectures were given:—

G. DIETRICH: "The summerly discontinuity layer in the Central North Sea and its reaction based on the results of recent investigations made with the survey and research vessel 'Gauss'."

Messrs. HACHEY, KREY, LUMBY, KULLENBERG, JERLOV, and the Chairman took part in the discussion.

P. GROEN: "Notes on the great storm surge of 1st February 1953."

Messrs. CARRUTHERS, THOMSEN, and LUMBY took part in the discussion.

E. LISITZIN: "Les ondes internes dans la Baltique."

U. STEFÁNSSON: "The surface temperature of the north Icelandic coastal area."

O. H. SÆLEN: "On the use of punch-card machines for dynamic computations in oceanography."

Messrs. KOCZY, DIETRICH, BÖHNECKE, and the Chairman took part in the discussion.

Prof. MOSBY informed the Committee that at the computation center in Bergen (Norway) the facilities for such work were open to interested institutions at a reasonable cost.

J. N. CARRUTHERS: "A simple device for measuring currents in the interest of fishery operations."

Messrs. MOSBY, EGGVIN, and the Chairman took part in the discussion.

J. EGGVIN: "On the latest model of the Ekman current meter."

Messrs. CARRUTHERS, MOSBY, DIETRICH, BÖHNECKE, and LUMBY took part in the discussion.

The following communication was distributed:—

J. B. TAIT: "Quantitative assessment of the Atlantic Current in the Faroe-Shetland Channel."

III. Recommendations.

1. The Hydrographical Committee recommends that the staff of the Service Hydrographique be increased by the addition of one assistant.

2. The Hydrographical Committee recommends that charts of mean monthly distribution of temper-

ature and salinity for the region covered by the monthly charts should be prepared.

The Committee realizes that this work can be undertaken only if the staff of the Service Hydrographique is increased.

Plankton Committee.

Chairman: Prof. T. BRAARUD.

I. Proceedings.

The reports on work done in 1952 were adopted. The report by Dr. G. THORSON and Mr. F. S. RUSSELL on the progress of preparing and printing Plankton Identification Sheets (see below) was considered and it was agreed to suggest that fish larvae should be included in the scheme.

"In the coming year or two we are approaching the end of the sheets on adult animals, and we shall then have to focus upon the larvae. This means that we shall have to look for quite new authors, several of which are still engaged in identifying the species which they are going to describe in the sheets. The preparation of these larval sheets no doubt will claim a longer space of time than necessary to prepare sheets of the adults, most of which were already well known previously. This fact will undoubtedly slow down the rate of publication in the years to come."

It was agreed to submit the following statement to the Hydrographical Committee: "The Plankton Committee wants to convey to the Hydrographical Committee their appreciation of the value of the *Synoptic Hydrographic Charts* which they find most useful".

The Committee discussed ways and means of establishing facilities for more extensive collaboration

between young planktologists of the various countries. It was agreed to consider suitable plans for discussion at the next meeting.

Dr. J. H. FRASER demonstrated a device improving the sedimentation method of quantitative plankton studies.

Prof. E. STEEMANN NIELSEN demonstrated a transportable apparatus for quick filtering of water samples for use in production measurements with ^{14}C .

The Committee proposed that Dr. GUNNAR THORSON and Mr. F. S. RUSSELL be re-appointed as editor and co-editor of the Plankton Identification Sheets for the ensuing year.

Prof. T. BRAARUD was re-elected Chairman for 1953/54.

II. Communications.

The following papers were read:—

J. KREY: "Interrelations between phytoplankton, temperature, discontinuity layer, and the screen of turbidity in the North Sea in August 1952."

SHEINA M. MARSHALL: "On the feeding of *Calanus*."

Dr. J. PÉRÈS presented the following papers:—

L. CASANOVA: "Annélides et mollusques dans le plancton du Golfe de Marseille."

L. DEVÈZE: "La nutrition des animaux planctoniques marins au dépens du contenu bactérien des eaux."

Statistical Committee.

Chairman: Dr. NILS ROSÉN.

Proceedings.

The *Bulletin Statistique* for 1950, published in April 1953, was laid before the Committee. No remarks.

The Chairman said that the missing material for the *Bulletin Statistique* for 1951 had now been received, and it will be published very soon.

Table 6 "Small fish" in the Bulletin was discussed. It was decided to state an approximate size of this class. If satisfactory figures could not be received the table should be omitted.

The Chairman said that information about conversion factors has been received from several countries and will be published in the next Bulletin.

The Committee found it desirable that in the introduction of the *Bulletin Statistique* references should be made to statistics published in the *Annales Biologiques*.

After a discussion it was decided to continue as before the table and columns concerning value of the catches in the *Bulletin Statistique*.

Dr. NILS ROSÉN was re-elected Chairman.

VERSION FRANÇAISE

Réunion Scientifique Spéciale

LA MORUE

Organisateur: M. GUNNAR ROLLEFSEN; Rapporteur: Dr. PAUL M. HANSEN.

M. ROLLEFSEN souhaite la bienvenue aux membres et aux personnes invitées à la réunion et demande, en ce qui concerne la procédure, que l'on donne lecture des papiers distribués en temps voulu avant la réunion. Il invite les auteurs à ne donner que de brefs exposés de leurs travaux en faisant ressortir les points importants de leur sujet. Il propose, en outre, que la question soit traitée en deux chapitres, (a) populations littorales et (b) populations océaniques, et que la discussion générale ait lieu plus tard¹⁾.

A la suite de cette discussion, les conclusions suivantes ont été tirées:—

La réunion scientifique spéciale estime important que:

1. l'on détermine par des expériences sur la morue

¹⁾ D'après la Recommandation 4 b du Comité Consultatif, les travaux seront publiés dans un numéro spécial des *Rapports et Procès-Verbaux* (Vol. No. 136).

les effets des variations contrôlées de la température et de la nourriture sur la croissance et les caractères physiologiques liés à cette dernière.

2. l'on fasse soigneusement des observations morphologiques sur les différentes populations de morues pour comparaison avec le travail expérimental.

3. l'on donne tout appui à la Réunion Scientifique Spéciale proposée par le Sous-Comité de la Mer du Nord pour l'échantillonnage des populations de poissons. Il est bien entendu que ses termes de référence comprennent une évaluation, non seulement des méthodes de prélèvement et d'échantillonnage employées à présent, mais aussi des méthodes employées pour l'utilisation de ces échantillons et des suggestions pour l'avenir destinées à fournir des informations types sur la croissance, la mortalité et le recrutement, qui permettront de fournir des réponses adéquates à la Commission Permanente de la Convention de 1946.

RAPPORTS

Rapport et Recommandations du Comité Consultatif.

Président: M. R. S. WIMPENNY.

I. Compte-rendu.

1. Le Président ouvre la séance, exprime sa satisfaction à M. ÁRNI FRÍÐRIKSSON qui a accepté le poste de Secrétaire Général et félicite le Dr. HAVINGA qui a reçu l'ordre d'Orange-Nassau.

2. Programme de Procédure.

A cette première séance, le programme est légèrement modifié; il est convenu que chaque Président nouvellement élu ne rentrera pas en fonction avant le 1er Novembre et il est en outre précisé que la période de mandat stipulée dans les Statuts, Art. No. 3, ne sera pas effective avant l'année prochaine.

3. "Overfishing". Questions soulevées par la Convention Internationale des Pêches de 1946.

Le Président attire l'attention sur deux points importants de la lettre, (a) la préservation de la morue, de l'églefin et de la plie dans les eaux du nord et (b) l'extension possible de la zone d'application de la Convention; la question est transmise pour examen aux Sous-Comités Nord-Est et Nord-Ouest et au Comité Atlantique. Les Présidents de ces Comités réunis avec le Président du Comité Consultatif sont priés d'examiner cette question à la lumière des recommandations reçues de leurs Comités et de tirer une conclusion convenable pour la présentation à la Réunion finale du Conseil, au besoin en tenant compte de toute recommandation émanant de la Réunion Scientifique Spéciale sur la Morue.

A la seconde séance l'avis présenté par le Président du Comité est accepté et la Recommandation 5 est adoptée.

4. Rapport sur l'Avancement des Travaux.

(a) La définition statutaire des charges du Secrétaire Général. Il est admis que dans les conditions actuelles avec un scientifique comme Secrétaire Général à partir du 1er Janvier, la définition de ces charges telle qu'elle a été présentée dans les Statuts est convenable et n'a pas besoin d'être modifiée comme on l'a suggéré en 1952 (Rapp. et Proc.-Verb. 134, I, p. 48, 4 c.).

(b) Publication des communications. A la demande du Président, la décision de l'année dernière (Rapp. et Proc.-Verb. 134, I, p. 48, 6 d), qui ne donnera guère de résultats satisfaisants, est annulée.

5. Réunion Scientifique Spéciale 1953.

Etant donné le grand nombre des contributions reçues, il est décidé à la première séance que quelques communications ne se rattachant pas intimement aux sujets proposés seront transmises aux réunions des Comités des Mers Nordiques où elles seront lues et discutées.

A la seconde séance l'Organisateur, M. ROLLEFSEN,

est félicité sur l'admirable façon dont il a préparé et conduit la réunion. Il est convenu que les communications présentées seront publiées dans les Rapp. et Proc.-Verb. (Recommandation 4 b).

6. Rapports de Comités et Sous-Comités.

Les Rapports et Recommandations des Comités sont discutés et acceptés à la seconde séance (Recommandation 1); une attention spéciale est accordée à ceux qui concernent les publications, les réunions et la conservation du poisson (cf. Recommandations 2, 4 et 6).

L'attention est attirée sur une proposition des Sous-Comités de Transition et de la Baltique concernant le travail préparatoire pour une nouvelle convention internationale en vue de la protection du stock de poissons dans la Baltique.

Il est décidé que le Sous-Comité de la Baleine continuera à fonctionner et sera convoqué en réunion par le Président du Sous-Comité quand il le sera nécessaire.

La publication d'une note sur les migrations à longue distance des saumons, suggérée par le Comité du Saumon et de la Truite, est renvoyée à l'Editeur du *Journal du Conseil*.

M. FRÍÐRIKSSON reçoit des remerciements pour son travail en tant que Président du Sous-Comité du Hareng.

7. Recommandation comportant Augmentation de Dépenses.

A la suite de l'accroissement des travaux incombant au Département Hydrographique, le Professeur SVERDRUP déclare que le Comité Hydrographique a proposé d'engager un nouvel assistant. La proposition est soutenue par M. ÁRNI FRÍÐRIKSSON et acceptée. (Cf. Recommandation 9).

8. Langues à employer dans les Publications du Conseil.

A la première séance, le Président prie les membres d'envisager la question de l'emploi des langues allemande et espagnole dans les publications du Conseil; à la seconde séance, la question est discutée assez longuement et la Recommandation 7 est adoptée.

9. Nominations et Elections.

Le Dr. A. J. C. JENSEN est nommé Président à la session de l'an prochain pour le Comité des Mers Nordiques, M. J. LE GALL pour le Comité Atlantique, et le Dr. W. C. HODGSON pour le Comité Pélagique. La réélection des éditeurs suivants est proposée: Dr. NILS ROSÉN, Lt. Cdr. J. R. LUMBY, Dr. GUNNAR THORSON, et M. F. S. RUSSELL (Recommandation 8).

M. R. S. WIMPENNY est réélu Président du Comité Consultatif.

II. Recommandations¹⁾.

1. Rapports généraux des Comités.

Les rapports et recommandations des Comités et Sous-Comités sont adoptés.

2. Réunions Spéciales.

(C. Res. 1953/3).

Il est proposé que les Réunions Spéciales suivantes se tiennent à la réunion du Conseil 1954:

- (a) Ostréiculture et Mytiliculture.
Organisateur: Dr. B. HAVINGA; Rapporteur: Dr. H. A. COLE. (A tenir vers la fin de réunion du Conseil).
- (b) Les Problèmes et les Méthodes d'Echantillonnage des Populations de Poissons.
Organisateur: M. G. ROLLEFSEN; Rapporteur: M. B. B. PARRISH (ou un autre à la discrétion de M. ROLLEFSEN).
- (c) Techniques de Marquage du Hareng et Résultats.
Organisateur: M. W. C. HODGSON; Rapporteur: M. O. AASEN.

3. Ordre des Réunions en 1954.

(C. Res. 1953/4).

Il est décidé que le Président du Comité Consultatif consultera les Présidents de Secteur en vue de trouver le temps convenable pour les Réunions Spéciales mentionnées ci-dessus.

4. Publications.

(C. Res. 1953/5).

(a) Publication du Travail sur l'Echo-Sondage des Poissons. Il est décidé que six ou sept experts seront invités à rencontrer le Président du Sous-Comité du Hareng à Copenhague en Mars en vue de réunir ou de choisir les travaux sur les résultats de l'écho-sondage afin qu'ils puissent être publiés dans un numéro spécial des *Rapports et Procès-Verbaux*.

(b) Comptes-Rendus de la Réunion Scientifique Spéciale sur la Morue. Il est décidé que les contributions à la Réunion seront publiées en tant que rapport spécial dans les *Rapports et Procès-Verbaux*.

(c) Rapport Atlantique. En considération du nombre d'études présentées au Comité Atlantique, il est décidé de les publier dans un Rapport Atlantique.

5. Co-opération Internationale.

(C. Res. 1953/6).

Comme suite à la demande d'avis reçue par le Président du Conseil du Président de la Commission Permanente de la Convention de la Pêche de 1946,

¹⁾ Entre parenthèses la désignation officielle telle que passée par l'Assemblée plénière.

un tel avis est accepté et il est décidé d'établir un Comité de Liaison comprenant le Président du Comité Consultatif (comme Président) en collaboration avec les Présidents des Comités du Nord-Est, Nord-Ouest, Mer du Nord et Atlantique, avec la possibilité d'admissions.

6. Conservation du Poisson.

(C. Res. 1953/7).

Il est décidé de recommander que le Conseil prenne position pour soumettre les propositions suivantes sur la conservation des stocks de saumons en Baltique au Gouvernement Danois pour examen et transmission aux Gouvernements de Suède, Finlande et Allemagne:—

(a) Prohibition de l'emploi de lignes dérivantes dans les mois de Décembre—Mars.

(b) Etablissement d'une taille minimum pour le saumon d'au moins 50 cm., mais de préférence 55 cm.

(c) Etablissement d'une taille minimum pour la maille des filets dérivants pour la pêche du saumon telle que, la maille étant tendue diagonalement dans le sens de la longueur du filet, une jauge plate de 160 mm. de large et 2 mm. d'épaisseur passe au travers de cette maille aisément quand le filet est mouillé.

(d) Etablissement d'une taille minimum de 19 mm. pour l'ouverture (moindre distance entre la pointe et la tige) des hameçons des lignes dérivantes et des palangres utilisées pour la pêche du saumon.

7. Langues à utiliser dans les Publications du Conseil.

(C. Res. 1953/8).

Il est proposé que pour toutes les publications du Conseil, en dehors du *Journal du Conseil*, l'Anglais et le Français restent les langues officielles. Dans le cas du *Journal*, l'Allemand et l'Espagnol seront aussi acceptés quand ce sera le moyen le plus efficace de publier des contributions; mais dans ce cas il y aura un résumé dans une autre langue, soit l'Anglais, soit le Français et les légendes dans les diagrammes et tableaux seront traduites également en Anglais ou en Français.

8. Réélection des Editeurs.

La réélection des Editeurs suivants est proposée:—
Dr. NILS ROSÉN, *Bulletin Statistique*; Lt.-Cdr. J. R. LUMBY, *Journal du Conseil*; Dr. GUNNAR THORSON et M. F. S. RUSSELL, Editeur et Co-éditeur des *Fiches d'Identification du Zooplancton*.

9. Augmentation du Personnel du Conseil.

(C. Res. 1953/1).

L'emploi d'un assistant au Département Hydrographique.

Rapports et Programmes des Comités et des Sous-Comités.

Comité des Mers Nordiques.

Le Dr. C. E. LUCAS préside.

Les communications suivantes sont lues et suivies d'intéressantes discussions¹⁾:—

O. AASEN: "Sur le calcul théorique de l'importance numérique du stock des populations de poissons."

G. DANNEVIG: "Sur les lieux d'alimentation de la morue des Lofoten."

G. C. TROUT: "Quelques observations sur la croissance des otolithes de la morue en Mer de Barentz."

¹⁾ Les communications seront publiées dans les Rapp. et Proc.-Verb., Vol. No. 136, comme appendices des rapports de la Réunion Scientifique Spéciale sur la Morue.

Sous-Comité du Secteur Nord-Est.

Président: M. G. ROLLEFSEN.

I. Compte-rendu.

Le Président ouvre la séance et souhaite la bienvenue aux membres, aux experts, aux visiteurs et observateurs présents.

La liste des membres n'est pas modifiée.

Le rapport administratif et les *Annales Biologiques* sont présentés et adoptés.

De courts rapports sur le travail courant dans le secteur sont présentés.

Une lettre au Conseil du Président de la Commission Permanente de la Convention des Pêches de 1946 soumise par le Comité Consultatif est discutée et la Recommandation III ci-dessous est adoptée.

M. GUNNAR ROLLEFSEN est réélu Président.

II. Communications.

GUNNAR DANNEVIG: "Sur la technique du marquage."

T. A. GULLAND: "Sur l'échantillonnage dans les captures commerciales."

G. TROUT: "Sur les otolithes de la morue."

III. Recommandation.

D'après les données scientifiques dont on dispose actuellement, le Sous-Comité du Secteur Nord-Est est d'avis, qu'il ne convient pas de recommander d'autres mesures de protection dans le secteur. Les informations obtenues laissent à penser que cette question doit être continuellement prise en considération. Le Sous-Comité ne pense pas seulement à l'efficacité du maillage de 110 mm., par exemple, mais aussi, à la lumière de l'importance des changements climatiques récents, que la relation entre l'effort des pêches et les stocks utilisables doit être très attentivement surveillée. Il est vivement souhaité, en conséquence, que le Conseil ait de temps à autre l'occasion d'exprimer son point de vue sur cette question vitale.

Sous-Comité du Secteur Nord-Ouest.

Président: Dr. A. VEDEL TÅNING.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres et aux personnes invitées à la réunion, spécialement aux observateurs du Canada et des Etats-Unis.

La liste des membres est approuvée sous réserve de la désignation ultérieure d'un nouveau membre de la Suède en remplacement d'un membre qui doit se retirer en 1954.

Le rapport administratif et les *Annales Biologiques* sont adoptés par le Comité.

Le Président est réélu.

II. Communications.

Les rapports suivants sont soumis:—

1. Pour le secteur des Féroës:— Le Dr. Å. VEDEL TÅNING fait un court exposé, spécialement sur les recherches de M. J. S. JOENSEN sur la morue.
2. Pour le secteur d'Islande:—
Å. FRIDRIKSSON: "Recherches sur les pêcheries dans la baie de Faxa en 1953."
JÓN JÓNSSON: "Le stock de morues d'Islande en 1953."
UNNSTEINN STEFÁNSSON: "Notes sur les conditions hydrographiques des eaux d'Islande en 1953."
3. Pour le secteur du Groënland:—
PAUL M. HANSEN: "Recherches sur les pêcheries dans les eaux du Groënland en 1953."
F. HERMANN: "Observations hydrographiques dans les eaux du Groënland en 1953."

III. Programme de Travail.

Il est convenu que les différents pays mettront à exécution le travail ci-dessous indiqué, mais comme plusieurs pays n'ont pas encore fixé leur programme de travail à la mer au cours de l'année qui va commencer, il est décidé que de plus amples détails seront fixés par correspondance.

Allemagne: Croisières avec un chalutier de recherche dans les détroits du Danemark et de Davis en Septembre—Octobre (morue, rascasse, hydrographie, plancton).

Angleterre: Collections de plancton constituées par le bateau météorologique "J".

Belgique: Le garde-côte "Lt. Victor Billet" exécutera le travail d'hydrographie et de collections de plancton dans les eaux d'Islande.

Danemark: Même travail à la mer qu'en 1953, plus de temps sera passé par le "Dana" dans les eaux du Groënland.

Ecosse: Travail suivi sur l'églefin etc. dans le secteur Féroë. Travail d'hydrographie pour le hareng au

nord des Féroës. Un nouveau bateau de recherches sera peut-être utilisable.

France: Travail à fixer par correspondance.

Hollande: Aucun travail dans ce secteur en 1954.

Irlande: Aucun travail à la mer en 1954.

Islande: Le travail sera continué dans le même sens qu'auparavant, entr'autres: marquage du hareng au large de la côte sud, recherches en baie de Faxa, hydrographie au large de l'Islande septentrionale pendant une année entière; pour la morue, recherches sur le stock de ponte comme auparavant, expériences de marquage et collections de matériel dans les eaux du Groënland.

Norvège: Echantillonnage du matériel de morues en provenance des palangres ou des chalutiers dans les eaux du Groënland. Recherches sur le hareng, hydrographie, etc. dans ce secteur.

Suède: Travail à fixer plus tard par correspondance.

IV. Recommandations.

1. Le Sous-Comité du Secteur Nord-Ouest examine les questions posées au Conseil International par la Commission Permanente de la Convention des Pêcheries de 1946 sur les stocks septentrionaux de morues, d'églefins et de plies. Ils arrivent à la conclusion que, à la lumière des preuves scientifiques maintenant utilisables et de l'introduction imminente de la réglementation de la maille de 110 mm. comme mesure prise dans la Convention, il n'est pas maintenant possible de fournir une réponse sans réserve. Ils recommandent cependant que l'on mette à exécution des recherches ultérieures et que le Conseil fixe le plus tôt possible sa position.

2. Le Sous-Comité recommande en outre qu'un Comité spécial de Liaison soit désigné par le Comité Consultatif, qui sera autorisé par le Conseil à considérer et à répondre, à la lumière des preuves alors utilisables par lui, aux questions et à toutes questions à venir posées au Conseil par la Commission.

3. Le Sous-Comité du Secteur Nord-Ouest accepte en principe, que les observations hydrographiques soient exécutées le long de la section en plein Atlantique indiquée dans les comptes rendus No. 14, pt. 9 (voir ci-dessous) de la 3ème réunion annuelle du Comité de Recherches et Statistiques de l'ICNAF sur laquelle l'attention a été attirée par le Président du Comité.

"Que les pays européens, et le Royaume Uni en particulier, soient invités à entreprendre une section s'étendant approximativement du sud-ouest de l'Irlande à une position située environ par 51° Lat. N., 31° Long. Ouest, jusqu'à une profondeur de 500 m. et dans quelques stations jusqu'au moins 1,000 m."

V. Sous-Comité de la Question des Féroës.

Le Président, Dr. Å. VEDEL TÅNING fait un rapport sur le travail en cours, spécialement celui exécuté sur la morue pendant l'année par M. J. S. JOENSEN au laboratoire annexe de Thorshavn. Il a été montré que la classe 1947 a une grande importance. Ceci sera d'une grande aide dans la compréhension des recherches du Sous-Comité. On a trouvé au cours des dernières années que la situation des lieux de ponte au nord et à l'ouest des îles était plus au large dans des eaux plus profondes, dans le secteur nord actuellement en dehors du secteur que les pêcheurs des

Féroës ont convenu d'assimiler à un secteur fermé. Les données statistiques valables des années d'après guerre sont discutées également.

Comme cette question doit être vraisemblablement continuée pendant plusieurs années en accord avec le programme convenu en 1948 (voir Rapp. et Proc.-Verb. Vol. 124, p. 37, Rec. 1), les résultats sur lesquels on peut baser une proposition seront à obtenir d'abord. Il est convenu que la question sera reconsidérée l'année prochaine.

Les membres promettent de procurer au Sous-Comité quelque matériel d'intérêt, spécialement des données statistiques des chalutiers anglais.

Sous-Comité de la Mer du Nord.

Président: Dr. C. E. LUCAS.

I. Compte-rendu.

Le Président ouvre la réunion en souhaitant la bienvenue aux spécialistes des pays représentés au Sous-Comité, et aux différentes personnes présentes. Un pointage de l'assistance montre que tous les pays membres sont représentés.

Les membres du Sous-Comité ont devant eux les épreuves du rapport administratif et des *Annales Biologiques*. Ils considèrent que celles-ci fournissent un rapport satisfaisant des activités au cours de l'année précédente et il est demandé aux membres d'informer dès que possible le Président ou le Secrétariat des corrections détaillées ou des améliorations jugées nécessaires avant l'impression.

Le Sous-Comité désire signaler leur appréciation de la nouvelle disposition prise par le Bureau du Conseil pour la circulation des documents, etc. avant et au début de la réunion. Ces documents vont être évidemment d'une aide précieuse pour les membres.

Le Dr. C. E. LUCAS est réélu Président.

II. Communications.

Un exposé (par J. A. GULLAND) est soumis concernant le travail du Sous-Comité et quatre autres pour le Sous-Comité des Pêches Comparatives:—

J. A. GULLAND: "Fluctuations de l'échantillonnage dans les mensurations du poisson commercial mis à terre."

C. E. LUCAS, A. RITCHIE et B. B. PARRISH: "Action sélective de la maille dans la seine sur le poisson rond."

M. GRAHAM, R. J. H. BEVERTON, A. R. MARGETTS et J. A. GULLAND: "Note sur des comparaisons chalutier/seineur publiées".

A. R. MARGETTS: "Relation longueur/grosueur chez l'églefin et sur application à l'action sélective de la maille."

M. GRAHAM, A. R. MARGETTS et J. A. GULLAND: "Quelques essais de seines et de chaluts en 1953."

III. Programme de Travail.

Des épreuves du projet d'études scientifiques de la France, de la Norvège, de l'Angleterre et de l'Ecosse sont à la disposition des membres et des arrangements sont pris pour les autres pays qui ont l'intention de travailler en Mer du Nord afin qu'ils fournissent dès que possible des copies de leurs projets d'études.

IV. Recommandation.

Il est convenu que le Comité Consultatif est invité à fixer, pour la réunion de 1954, une Réunion Spéciale sur "Les problèmes et les méthodes d'échantillonnage dans les pêcheries maritimes commerciales, à la fois démersales et pélagiques".

Comité Atlantique.

Président: Professeur J. LE GALL.

I. Compte-rendu.

1. Aucune modification n'est apportée dans la composition générale du Comité.

2. Le rapport administratif est adopté.

3. *Annales Biologiques*. Le Comité Atlantique manifeste le regret d'avoir dû constater, une fois de plus, que plusieurs études et notes présentées par les Présidents du Comité Atlantique, du Plateau Continental Européen et du Plateau Continental Africain et destinées aux *Annales Biologiques* n'ont pas été retenues pour publication dans les *Annales* et ont été transférées au *Journal du Conseil* pour être publiées *sine die*.

4. Exploitation exagérée des fonds de pêche par les chalutiers (Overfishing). Le Comité Atlantique, les Sous-Comités du Plateau Continental Européen et du Plateau Continental Africain ayant examiné sous leurs aspects scientifiques les questions posées par la Convention de Pêche de 1946 adoptent la Recommandation IV, a—c.

5. Publication des rapports. Le Comité examine les moyens offerts pour la publication des rapports présentés et fait à ce sujet les recommandations suivantes:

(a) Le Comité Atlantique, les deux Sous-Comités du Plateau Continental Européen et du Plateau Continental Africain, recommandent aux auteurs de n'adresser aux Présidents des Comités précités, pour présentation aux séances du Conseil, que des rapports originaux n'exposant pas longuement les résultats de travaux classiques actuellement bien connus, complétés par des résultats d'observations n'ayant porté que sur une période de temps assez courte: ces résultats étant destinés en fait aux *Annales Biologiques*.

(b) Les Comités précités souhaiteraient voir les rapports présentés et retenus publiés dans le *Journal du Conseil* avant la prochaine Assemblée plénière, et ceci sous 3 titres, Clupéidés, Thonidés, et Merlu, groupant chacun la totalité des rapports présentés sous ces titres.

6. Le Prof. JEAN LE GALL est réélu Président.

II. Communications.

A. Clupéidés.

E. POSTEL: "Résumé des connaissances acquises sur les Clupéidés de l'ouest Africain."

M. ROSSIGNOL: "Les sardinelles de la région de Pointe Noire."

B. ANDREU: "The relation between the number of gill rakers and size in Spanish anchovy from the Atlantic coast."

G. LEFÈVRE: "Observations sur la ponte de la sardine sur la côte ouest du Finistère."

Mme. M. L. FURNESTIN: "La ponte de la sardine et de l'anchois dans les eaux Marocaines."

J. CADENAT et R. MOAL: "Note sur la sardine (*Sardina pilchardus* W.) dans la région du Cap Blanc de Mauritanie."

Une discussion suit dans laquelle interviennent: MM. CADENAT, CUESTA, FURNESTIN, J. LE GALL, LETACONNOUX, LOZANO et RAMALHO.

B. Scombridés, Thonidés.

E. POSTEL: "Contribution à l'étude des Thonidés de l'Atlantique tropical."

JEAN MORICE: "Essai systématique sur les familles des Cybiidae, Thunnidae et Katsuwonidae, poissons scombroïdes."

JEAN MORICE: "Un caractère systématique pouvant servir à séparer les espèces de Thunnidae atlantiques."

F. FRADE et E. POSTEL: "Contribution à l'étude de la reproduction des Thonidés (s. lat. de l'Atlantique tropical)."

J. LE GALL et G. LEFÈVRE: "Oeufs et larves des Thonidés recueillis au cours des campagnes du 'Président Théodore Tissier'."

MM. FRADE, FURNESTIN, LE GALL et HELDT interviennent dans la discussion ouverte sur ces rapports.

C. Merlus. (3ème Colloque).

R. LETACONNOUX: "Rapport sur le merlu."

R. LETACONNOUX: "Note sur *Merluccius bilinearis* (MITCHILL)."

CL. MAURIN: "Cinquième note sur le merlu des côtes du Maroc."

J. CADENAT: "Remarques au sujet du *Merluccius senegalensis*."

E. POSTEL: "Le merlu noir (*Merluccius senegalensis* CADENAT)."

K. T. HOWARD, N. B. MARSHALL et R. S. WIMPENNY: "A voyage to the black hake grounds off West African coast. (Déjà présenté au Plateau Continental Africain.)"

Les rapports sont discutés et MM. CADENAT, FURNESTIN, LETACONNOUX et RAMALHO interviennent dans le débat.

III. Programme de Travail.

Les travaux effectués pendant l'année 1952—1953 sont exposés et le programme des travaux pour l'année 1953—1954 est adopté.

IV. Recommandation.

"Overfishing". L'exploitation exagérée des fonds de pêche par les chalutiers.

Après avoir discuté sur la question, le Comité

Atlantique, appelé à faire connaître son avis au point de vue scientifique sur l'extension de l'application de la Convention de 1946 depuis la latitude de Penmarch (latitude méridionale actuelle) jusqu'à celle du Détroit de Gibraltar (latitude méridionale proposée), fait à ce sujet les recommandations suivantes:—

(a) Les Comités Atlantique, Plateau Continental Européen, Plateau Continental Africain, estiment que la limite méridionale de la zone d'application de la Convention de 1946 pourrait être portée progressivement à la latitude du Détroit de Gibraltar à partir du 1er Janvier 1955.

(b) Les constatations faites sur la déplétion nette du stock de poissons comestibles sur la côte occiden-

tale d'Afrique (Maroc, Mauritanie, Sénégal), provoquée par une exploitation exagérée des fonds par les chalutiers, les incitent à attirer l'attention des pays intéressés sur cette déplétion pour que soient envisagées dès à présent les mesures à prendre pour y remédier: l'extension possible de la Convention de 1946 sur la grandeur des mailles de chalut et sur la taille marchande des poissons comestibles de cette côte.

(c) Après les constatations faites au cours de ces dernières années sur la pêche des soles ils estiment qu'il n'y a pas déplétion du stock de Soles. Mais la déplétion du stock de Merlus doit être arrêtée par des mesures appropriées si l'on ne veut pas attendre qu'elle soit irrémédiable.

Sous-Comité Atlantique Européen.

Président: Dr. J. CUESTA.

I. Compte-rendu.

Pas de variations dans la composition du Sous-Comité. Le rapport administratif est adopté.

Les membres du Sous-Comité exposent les travaux réalisés dans leur pays respectif.

A une question, posée par M. LE GALL, le Sous-Comité est d'accord, que les rapports écartés par l'éditeur des *Annales Biologiques*, soient publiés dans le *Journal du Conseil*.

Le Dr. J. CUESTA est réélu Président.

II. Communications.

Les contributions suivantes sont lues et discutées:—
J. R. LUMBY: "Le poulpe vulgaire et la température de la mer."

R. MOLINIER et J. PICARD: "Cartographie des peuplements marins méditerranéens. (Flore. Faune sessile ou à faible mobilité)."

J. M. PÉRÈS et J. PICARD: "Biotopes et biocoenoses de la Méditerranée occidentale comparés à ceux de l'Atlantique nord-orient et de la Manche."

III. Programme de Travail.

Les travaux en cours seront poursuivis pendant l'année prochaine. M. LE GALL insiste sur la nécessité des échanges de données entre les chercheurs, au fur et à mesure qu'elles sont obtenues, ainsi qu'il l'avait été adopté lors de l'Assemblée de 1951. M. RAMALHO propose un échange d'écaillés de sardines entre les investigateurs.

Sous-Comité Atlantique Africain.

Président: Dr. J. FURNESTIN.

I. Compte-rendu.

Le Dr. J. FURNESTIN est réélu Président.

II. Communications.

W. GEIGER: "Utilisation d'une laque pour l'étude morphologique des poissons, notamment pour la détermination de la surface des corps."

CH. ROUX: "Activités du centre d'océanographie de Pointe-Noire (A.O.F.)."

J. COLLIGNON: "Observations hydrologiques sur les eaux superficielles de la région de Pointe-Noire."

E. POSTEL: "Observations hydrologiques au large des côtes d'A.O.F."

E. POSTEL: "Les faciès bionomiques des côtes de la Guinée Française."

M. DELAIS: "Note sur *Liza dumerili* STEIN et *L. hoefleri* St."

J. CADENAT: "Sur les mulets de la côte occidentale d'Afrique."

R. GAIL: "Nouvelles observations sur *Trachurus picturatus* BOWD."

K. T. HOWARD, N. B. MARSHALL et R. S. WIMPENNY: "Un voyage pour les bancs du merlu noir au large de la côte d'Afrique occidentale."

III. Programme de Travail.

Les difficultés de liaison entre les différents centres de recherches créés sur la côte Atlantique d'Afrique incitent les membres présents du Sous-Comité à renouveler le vœu, émis en 1952, que les spécialistes africains se réunissent en 1954, dans une ville africaine pour confronter leurs résultats et élaborer des programmes communs. Cette réunion se ferait sous l'égide du C.I.E.M. Le Président du Sous-Comité Africain serait chargé de l'organiser.

Comité Pélagique.

M. ÁRNI FRIDRIKSSON préside; Rapporteur: Dr. W. C. HODGSON.

Le Président ouvre la séance par des paroles de bienvenue et demande à M. LE GALL de présenter une introduction au film sur "La Biologie de l'Anguille" qui a été réalisé par M. le Prof. FONTAINE pour le Ministère de l'Education Nationale. Pour cause de maladie, le Prof. FONTAINE n'a pu venir, de sorte que le film est présenté à sa place par le Prof. J. PÉRÈS. A la fin de cet excellent film le Président demande à M. LE GALL de transmettre les remerciements du Comité au Prof. FONTAINE.

Suivent les études sur les aspects variés du sondage par échos et sur leur application à la pêche:—

P. A. DE BOER: "Valeur et efficacité des échographes utilisés dans les pêches néerlandaises."

R. E. CRAIG: "L'usage de l'échomètre dans la localisation du poisson — une vue de nos connaissances actuelles avec notes sur l'emploi de l'Asdic."

D. H. CUSHING et I. D. RICHARDSON: "Expériences de sondage par échos sur le poisson."

B. B. PARRISH: "Proposition pour l'introduction de recherches par sondages organisés, dans les investigations sur le hareng de la Mer du Nord."

De plus, le Dr. J. FURNESTIN présente son récent rapport sur les sondages par échos et la pêche à la sardine au Maroc; et M. LETACONNOUX relate ses expériences avec écho-sondeur sur la pêche du thon en Atlantique et énonce que s'il ne lui a pas été possible de situer le poisson directement, il a pu localiser avec succès la nourriture du thon (Céphalopodes, etc.) et ainsi trouver indirectement le poisson.

Le Dr. HODGSON dit son intention de discuter des écho-sondeurs et de l'Asdic, mais malheureusement il n'y a pas de contributions se rapportant à l'Asdic. Dans chaque pays membre du Conseil l'écho-sondeur est utilisé dans les pêches et le nombre relatif de

bateaux de pêches équipés varie de 20 à 95% de l'effectif total de la flotte de pêche. Les bateaux de toutes tailles sont susceptibles d'être équipés d'écho-sondeurs en relation avec tous les engins utilisés et beaucoup d'espèces sont chassées au moyen de cette nouvelle arme.

Il y a un très grand nombre d'appareils écho-sondeurs en usage en ce moment et leurs moyens d'action sont graduellement perfectionnés maintenant que les industriels ont réalisé que le sondeur devient un élément presque indispensable à l'équipement des pêcheurs. Pendant les 2 ou 3 dernières années une masse importante de documentation sur ce sujet a été collectée parmi les pays du monde entier, et il serait souhaitable qu'elle soit compilée et publiée au bénéfice de tous les intéressés.

Pendant cette réunion plusieurs contributions utiles ont été apportées à notre connaissance du sujet et leurs orientations ont été de montrer d'abord comment un sondeur lui-même peut être perfectionné, et ensuite comment l'utilisation peut en être améliorée dans l'intérêt général des pêches diverses.

Finalement, en relation avec la publication déjà mentionnée, il est suggéré de demander aux membres d'examiner la proposition suivante: "Le Sous-Comité du Hareng recommande que quatre ou cinq spécialistes soient désignés pour préparer la publication des documents utiles concernant l'écho-sondage et l'Asdic et que les fonds soient prévus pour un numéro spécial dans les Rapp. et Proc.-Verb. pendant l'année financière suivante."

En conclusion, le Président, au nom des membres du Comité Pélagique et du Sous-Comité du Hareng, désire remercier le Service Hydrographique de son concours.

Sous-Comité du Hareng.

Président: M. ÁRNI FRIDRIKSSON.

I. Compte-rendu.

La liste des membres est vérifiée et quelques amendements acceptés.

Le rapport administratif et les *Annales Biologiques* sont présentés et adoptés.

Les plans pour le travail de recherches en 1954 sont discutés.

Le Dr. W. C. HODGSON est élu Président.

II. Communications.

OLAV AASEN: "Marquage du hareng en Islande et en Norvège en 1953."

B. HAVINGA: "Statistiques du hareng de la Mer du Nord." (Lu par L. K. BOEREMA.)

F. DEVOLD, E. BERTELSEN, Á. FRIDRIKSSON, A. BÜCKMANN, J. ANCELLIN, B. B. PARRISH, H. HÖGLUND et W. C. HODGSON donnent des rapports sur quelques aspects du travail de recherche en 1953 par leur pays.

III. Programme de Travail.

1. Les mers septentrionales. Les pays travaillant dans ce secteur continueront les travaux de l'année précédente et coordonneront leurs projets. L'Ecosse

étendra, si possible, ses croisières également en hiver et l'Islande dotera ses bateaux de recherche d'un équipement Asdic. La Suède ne pourra probablement pas participer à ces travaux.

2. La Mer du Nord. Les pays intéressés continueront le travail dans le même sens qu'auparavant, sauf la Norvège qui prolongera la recherche du hareng pendant l'hiver et participera également au travail de marquage "Forfangst sild".

Le Président est autorisé à entrer en relation avec les pays intéressés afin de les adapter à un plan commun de recherche dans le sud de la Mer du Nord.

IV. Recommandations.

1. Etant donné l'intérêt et l'importance des résultats des expériences de marquage du hareng européen, il est recommandé qu'une réunion soit tenue en 1954

au cours de laquelle les pays participant à ces travaux présenteront les résultats de leurs recherches depuis 1946.

2. Il est recommandé que l'on charge 4 ou 5 spécialistes désignés par le Sous-Comité du Hareng de préparer pour la publication les documents utiles concernant l'écho-sondage et l'Asdic et que les fonds soient prévus sur l'exercice de l'année prochaine pour un numéro spécial sur ce sujet dans les séries *Rapports et Procès-Verbaux*.

3. Il est en outre recommandé que le Président du Sous-Comité du Hareng consulte tous les pays intéressés par la pêche du hareng en vue de coordonner toutes les informations obtenues des travaux avec l'échomètre exécutés en Mer du Nord par les bateaux de recherche et toutes les données qui seront susceptibles d'être obtenues par les autres bateaux utilisant les échomètres.

Sous-Comité de la Baleine.

1. Une réunion du Sous-Comité de la Baleine s'est tenue le 2 Octobre 1953. En l'absence regrettable du Dr. MACKINTOSH (G.B.), empêché par la maladie, M. DOBSON (Secrétaire de la Commission Internationale de la Baleine) est prié de présider la réunion.
2. Etaient présents: Professeur J. LE GALL (France); M. R. G. R. WALL (G.B.); Dr. LIENESCH (Hollande), Vice-Président de la Commission Internationale de la Baleine; M. BIRGER BERGERSEN et Dr. RUUD (Norvège), et Dr. RAMALHO (Portugal), ainsi que des observateurs.
3. M. DOBSON fait un bref résumé de l'activité de la Commission Internationale de la Baleine pendant ses quatre premières années d'exercice et attire spécialement l'attention sur les recommandations de la Commission faites lors de sa 5ème réunion, en Juin 1953. Il espère qu'elles deviendront effectives le 8 Octobre 1953.

4. Le Dr. RUUD donne un résumé des dispositions faites pour une expédition spéciale de marquage des baleines à la fin de cette année avant la saison de pêche pélagique qui s'ouvrira le 2 Janvier 1954. Le Comité témoigne sa grande satisfaction pour les dispositions prises.
5. Dr. RUUD résume également les autres travaux scientifiques effectués par les divers pays soulignés dans un rapport du Dr. MACKINTOSH présenté à la réunion de la Commission Internationale de la Baleine précitée.
6. Le Comité examine s'il est nécessaire que la Commission de la Baleine du Conseil poursuive son activité et il est finalement décidé que les dispositions présentes seront continuées, à savoir: le Comité sera convoqué chaque fois qu'il sera nécessaire par son Président.
7. Le Dr. MACKINTOSH est confirmé dans ses fonctions de Président du Comité.

Comité du Saumon et de la Truite.

Président: Dr. A. E. J. WENT.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres du Comité et aux auditeurs. La liste des membres est lue et vérifiée.

Le Dr. ARTHUR E. J. WENT est réélu Président du Comité.

II. Communications.

Des rapports sur les résultats obtenus depuis la séance précédente sur les marquages de saumons et de truites sont présentés par M. LARSEN (Danemark),

M. PYEFINCH (Ecosse), M. VIBERT (France), M. GUDJÓNSSON (Islande), M. ROSSELAND (Norvège), Dr. ALM (Suède) et le Président (Irlande). Le Président expose aussi les résultats du marquage le long de la côte de l'Irlande du Nord qui sont d'un intérêt aussi bien général que local, et on estime que ce travail sera à continuer dans les années à venir.

Il s'ensuit une discussion sur les résultats du programme de marquage des saumons adultes en mer et il est décidé que le Président préparera une courte note sur les migrations à longue distance des saumons mise à jour pour sa publication dans les *Annales*

Biologiques ou dans une autre publication du Conseil. La question des limites à imposer (on suggère 200, 400 et 500 kilomètres) est aussi discutée et il est décidé de laisser cette question à l'appréciation du Président.

Le Dr. ALM rapporte qu'il a communiqué une note au Sous-Comité de la Baltique sur la nécessité d'imposer des restrictions aux captures de saumons dans cette région. Le Sous-Comité de la Baltique a approuvé les suggestions du Dr. ALM qui seront discutées au Comité Consultatif.

Il est suggéré que durant la réunion de 1954 à Paris des dispositions soient prises pour organiser une visite du Comité et des autres personnes intéressées

aux établissements d'élevage de truites aux environs de Paris et si possible au Laboratoire de Biarritz où sont effectuées des recherches sur les saumons. Les dispositions à prendre pour ces visites sont laissées aux soins du Président et de M. VIBERT.

III. Programme de Travail.

Le Comité décide de continuer le programme de marquage des saumons et des truites en insistant sur le marquage des saumons adultes en mer et des tacons de descente. Il est laissé à chaque pays le soin d'organiser ses propres recherches dans le cadre du programme proposé en 1946 à Stockholm.

Comité des Mollusques et Crustacés.

Président: Dr. B. HAVINGA.

I. Compte-rendu.

Le Président souhaite la bienvenue aux membres du Comité et aux visiteurs.

Les membres du Comité n'ayant pas encore eu l'occasion d'étudier le rapport administratif et les *Annales Biologiques*, il est proposé que les observations à faire à ce sujet soient adressées ultérieurement au Président.

La prochaine réunion du Conseil doit se tenir en France. Ce pays est le plus grand producteur d'huîtres d'Europe et les techniques de culture y ont atteint un stade avancé de développement. Le Président déclare que la réunion en France serait une occasion unique pour une revue générale des progrès en ostréiculture et en mytiliculture. Il suggère que des hôtes n'appartenant pas au Conseil soient invités à une réunion spéciale.

M. P. DESBROSSES répond qu'il est très favorable à une telle réunion et il se déclare convaincu que le Gouvernement Français y prêterait son entier concours.

Dr. H. A. COLE suggère que le Comité des Mollusques et Crustacés fasse de nouveaux efforts pour arriver à une certaine standardisation des méthodes d'analyse bactériologique des mollusques et demande au Président de s'efforcer d'obtenir des informations auprès des membres, concernant les méthodes actuellement en usage et les règles qui sont appliquées. Cette suggestion est acceptée.

Le Dr. HAVINGA est réélu Président.

II. Communications.

Rapport sur les travaux effectués en 1953 sur les Mollusques. *Mytilicola intestinalis* STEUER en Angleterre et Pays de Galles.

E. LELOUP: "Sur la répartition de *Mytilicola* le long de la côte belge."

E. LELOUP: "Caractères biométriques des *Nephrops* débarqués à la minque d'Ostende."

H. J. THOMAS: "La distribution de *Mytilicola intestinalis* (STEUER) en Ecosse."

H. J. THOMAS: "Quelques observations sur la répartition, la biologie et l'exploitation de *Nephrops norvegicus* dans les eaux d'Ecosse."

H. J. THOMAS: "L'efficacité du casier de Cornouailles et du casier d'Ecosse dans la capture des homards et des crabes."

III. Programme de Travail.

Le programme des recherches sur les Mollusques et les Crustacés pour 1954 dans les différents pays est discuté. Il est décidé que l'on continuera à fournir des informations sur la biologie de *Nephrops norvegicus* et de *Pecten maximus*.

IV. Recommandation.

Le Comité des Mollusques et Crustacés recommande qu'une réunion spéciale en vue de passer en revue les progrès réalisés en ostréiculture et en mytiliculture soit tenue durant la prochaine réunion du Conseil; des experts n'appartenant pas au Conseil International seront invités à y assister à leurs frais. La réunion spéciale ne devra pas gêner les réunions régulières des Comités. La réunion sera suivie par une courte visite des centres de production de conchyliculture.

Il est demandé que le Conseil International autorise et parraine cette réunion.

Comité Hydrographique.

Président: Prof. H. U. SVERDRUP.

I. Compte-rendu.

La liste des membres est révisée et adoptée.

Le rapport administratif pour 1952 est approuvé.

Dr. CARRUTHERS rend compte des travaux du Sous-Comité pour l'avancement des mesures de courants dans tous leurs aspects et propose que ce Sous-Comité soit dissout car il a maintenant achevé sa tâche.

Cette proposition est adoptée.

Le Président tient à exprimer les remerciements du Comité Hydrographique pour la façon excellente dont le travail du Sous-Comité a été conduit.

L'Hydrographe du Conseil rend compte du travail effectué par le Service Hydrographique du Conseil pendant l'année passée.

A cet égard, le Président informe les membres des raisons d'achever les cartes hydrographiques du hareng au Service Hydrographique.

Le Président fait ressortir le besoin de disposer d'une aide plus grande dans le Service Hydrographique, car le travail à effectuer s'est énormément accru dans les dernières années. Il pense que les données hydrographiques se prêtent plus aisément à une compilation dans un office central que les renseignements biologiques. La Recommandation 1 est adoptée.

Le Président porte à la connaissance des membres la résolution transmise par le Comité du Plancton:—

“Le Comité du Plancton désire exprimer au Comité Hydrographique son appréciation sur la valeur des Cartes Synoptiques de Température et de Salinité qui lui sont très utiles.”

Le Président attire l'attention sur l'absence de cartes mensuelles de moyenne de température et de salinité pour la région couverte par les cartes synoptiques.

Lt. Cdr. LUMBY a l'intention de rassembler les informations données par les cartes existantes. Ceci ne serait cependant que d'une aide temporaire. La Recommandation 2 est adoptée.

La recommandation s'appuie sur le fait que l'augmentation du travail de routine, due d'une part à l'énorme extension des données qui sont publiées au *Bulletin Hydrographique* et portées sur des cartes, et, d'autre part, à la préparation des cartes mensuelles de surface, requiert de la part de l'Hydrographe et de son personnel une pleine attention. Ainsi, l'Hydrographe est incapable de distraire son temps pour l'étude de problèmes spéciaux et des demandes particulières ou de faire effectuer des travaux spéciaux par le personnel.

Lt. Cdr. LUMBY fait ressortir l'utilité du travail mené par le Service Hydrographique sur les variations de température.

Les programmes préliminaires des travaux hydro-

graphiques dans les différents pays en 1954 sont alors exposés.

Lt. Cdr. LUMBY insiste sur l'avantage d'avoir les programmes définitifs à une date ultérieure dans le but de réaliser une meilleure coordination des travaux à la mer.

Il n'est pas donné suite à cette intervention qui fera l'objet d'un nouvel examen.

L'Hydrographe présente un aperçu des observations de routine effectuées sur les trajets déterminés ou aux stations fixes par les bateaux de recherches, les navires de commerce, les bateaux feux, etc.

Le Président soulève la question de l'amélioration du déroulement des réunions.

Il est unanimement accepté que le Président exposera ce point au Comité Consultatif.

Le Prof. SVERDRUP est réélu Président.

II. Communications.

Les communications suivantes sont faites:—

G. DIETRICH: “La couche de discontinuité d'été dans la Mer du Nord centrale et sa réaction basée sur les résultats des récentes recherches faites par le ‘Gauss’ navire de recherches et de surveillance.”

MM. HACHEY, KREY, LUMBY, KULLENBERG, JERLOV et le Président prennent part à la discussion.
P. GROEN: “Notes sur la grande tempête survenue le 1er Février 1953.”

MM. CARRUTHERS, THOMSEN, et LUMBY prennent part à la discussion.

E. LISITZIN: “Les ondes internes dans la Baltique.”

U. STEFANSSON: “La température de surface de la région côtière de l'Islande du nord.”

O. H. SÆLEN: “Sur l'utilisation d'une machine à cartes perforées pour les calculs dynamiques en océanographie.”

MM. KOCZY, DIETRICH, BÖHNECKE et le Président prennent part à la discussion.

Le Prof. MOSBY informe le Comité qu'au centre de calcul de Bergen (Norvège) des facilités pour un tel travail sont offertes aux organismes intéressés, pour un prix raisonnable.

J. N. CARRUTHERS: “Un procédé simple de mesure des courants dans l'intérêt des opérations de pêche.”

MM. MOSBY, EGGVIN et le Président prennent part à la discussion.

J. EGGVIN: “Sur le modèle le plus récent de courantomètre Ekman.”

MM. CARRUTHERS, MOSBY, DIETRICH, BÖHNECKE et LUMBY prennent part à la discussion.

La communication suivante est distribuée:—

J. B. TAIT: “Evaluation quantitative du Courant Atlantique dans le Chenal Féroë-Shetlands.”

III. Recommandations.

1. Le Comité Hydrographique recommande que le personnel du Service Hydrographique soit augmenté d'un assistant.

2. Le Comité Hydrographique recommande que les cartes mensuelles de distribution moyenne de tempé-

rature et salinité pour la région couverte par les cartes mensuelles soient mises en route.

Le Comité admet que ce travail ne pourra s'effectuer que si le personnel du Service Hydrographique est augmenté.

Comité du Plancton.

Président: Professeur T. BRAARUD.

I. Compte-rendu.

Le rapport sur les travaux effectués en 1952 est adopté. Le rapport du Dr. G. THORSON et Mr. F. S. RUSSELL sur la préparation et l'impression des *Fiches d'Identification du Zooplancton* (voir ci-dessous) est examiné et il est admis que l'on y inclura les larves de poissons.

"L'année prochaine — ou dans deux ans — nous nous approcherons de la fin des fiches d'animaux adultes et il nous faudra nous concentrer sur les larves. Cela veut dire qu'il nous faudra trouver de nouveaux auteurs, dont quelques-uns sont encore préoccupés de classer les espèces à décrire dans les fiches. La préparation de ces fiches de larves demandera sans doute plus de temps que la préparation des fiches d'adultes, dont la plupart était déjà bien connue d'avance. Ce fait va sûrement retarder le train de la publication."

Il est convenu de soumettre la note suivante au Comité Hydrographique:—"Le Comité du Plancton désire exprimer au Comité Hydrographique son appréciation sur la valeur des Cartes Synoptiques de Température et de Salinité qui lui sont très utiles."

Le Comité discute des méthodes et des moyens de faciliter une collaboration plus étendue entre les jeunes planctonologistes de divers pays. Il est con-

venu d'envisager des programmes appropriés qui seront discutés à la prochaine réunion.

Le Dr. J. H. FRASER présente un moyen d'améliorer la méthode de sédimentation pour l'étude quantitative du plancton.

Le Professeur E. STEEMANN NIELSEN présente un appareil transportable pour la filtration rapide des échantillons d'eau destinés à la mesure de la production de ^{14}C .

Le Comité propose que le Dr. GUNNAR THORSON et M. F. S. RUSSELL soient désignés à nouveau comme éditeur et co-éditeur des *Fiches d'Identification du Zooplancton* pour l'année prochaine.

Le Professeur T. BRAARUD est réélu Président.

II. Communications.

Les travaux suivants sont lus:—

J. KREY: "Inter-relations entre le phytoplancton, la température, les couches de séparation et l'écran de turbulence dans la Mer du Nord en Août 1952."

SHEINA M. MARSHALL: "Sur la nourriture de *Calanus*."

Le Dr. J. PÉRÈS présente les travaux suivants:—

L. CASANOVA: "Annélides et Mollusques dans le plancton du Golfe de Marseille."

L. DEVÈZE: "La nutrition des animaux planctoniques marins au dépens du contenu bactérien des eaux."

Comité Statistique.

Président: Dr. NILS ROSÉN.

Compte-rendu.

Le *Bulletin Statistique* pour 1950, publié en Avril 1953, est présenté au Comité. Pas de remarques.

Le Président annonce que les documents manquant pour le Bulletin pour 1951 ont été reçus. Le Bulletin sera publié d'ici peu.

La Table 6 du Bulletin "Petits poissons" est discutée. Il est décidé de fixer une taille approximative pour cette classe. Si les résultats ne peuvent être établis dans une forme satisfaisante, cette table sera omise.

Le Président annonce que des informations sur les facteurs de conversion ont été reçues de plusieurs pays et seront publiées dans le prochain Bulletin.

Le Comité désire que dans l'introduction du *Bulletin Statistique*, des références soient données sur les statistiques publiées dans les *Annales Biologiques*.

Après discussion, il est décidé de continuer, dans le Bulletin, comme par le passé, les tables et les colonnes concernant la valeur des captures.

Le Dr. NILS ROSÉN est réélu Président.

2^{ÈME} PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1953

I. General.

Composition of the International Council for the Exploration of the Sea.

Belgium: M. H. DE VOS, who has been a Delegate since 1932, has retired. The Belgian Government have appointed M. le Docteur E. LELOUP, Directeur de l'Institut de Recherches Maritimes, as a Delegate to the Council's 41st Statutory Meeting.

France: Beside the Senior Delegate, M. le Prof. JEAN LE GALL, † 6. II. 54, M. ANDRÉ ALLOY, Directeur des Pêches Maritimes, Secrétariat d'Etat à la Marine Marchande, attended the 41st Statutory Meeting as a Delegate.

Sweden: Dr. K. A. ANDERSSON, a Delegate from 1930 to 1952, has retired, and Dr. JÖRAN HULT, Chief Director, Royal Directorate of Fisheries, has been appointed a Delegate to the Council.

United Kingdom: Mr. J. E. DE WATTEVILLE, C.B.E., a Delegate since 1945, has retired, and Mr. A. J. AGLIN, Fisheries Secretary, Scottish Home Department, has been appointed a Delegate to the Council.

Composition of the Bureau.

No change has taken place in the composition of the Bureau, all the existing Members having been re-elected for the year 1953/54.

Committees and Editors.

At the 41st Council Meeting, September—October 1953, the Consultative Committee unanimously re-

elected Mr. R. S. WIMPENNY as Chairman for 1953—1954. Various changes in the chairmanship took place, and a Liaison Committee was set up in connexion with the Permanent Commission of the 1946 Fisheries Convention. As regards the Members of Committees 1953—1954 see first part of this volume, pp. 19—22.

Lt.-Commander J. R. LUMBY, Lowestoft, was re-appointed Editor of the *Journal du Conseil*, Dr. NILS ROSÉN, Gothenburg, of the *Bulletin Statistique*, and Dr. GUNNAR THORSON, Copenhagen, as Editor, and Mr. F. S. RUSSELL, Plymouth, as Co-Editor, of the *Fiches d'Identification du Zooplancton*, for 1953—54.

Meetings.

The President had a meeting with the General Secretary on the 13th and 14th March 1953 at Copenhagen.

A meeting of the Bureau, attended by all Members, and the Chairman of the Consultative Committee, took place 26—28 April 1953, at Copenhagen.

A meeting regarding hydrographic observations in the Norwegian Sea took place on the 25th April 1953 at Copenhagen, attended by Professor H. U. SVERDRUP, Dr. Å. VEDEL TÅNING, Mr. ÅRNI FRIDRIKSSON, Dr. J. EGGVIN, Mr. F. HERMANN, and Mr. JENS SMED.

The 41st Annual Meeting of the Council took place at Copenhagen in September—October 1953 with the usual Bureau and other Meetings.

Income and Expenditure Account for the financial year $1/_{11}$ 1952— $31/_{10}$ 1953.

EXPENDITURE			RECEIPTS		
	D. kr.	D. kr.		D. kr.	D. kr.
I. Incidentals			I. Contributions		
President.....	1,000.00		Belgium.....	15,000.00	
Chairman of Consultative Committee	106.48		Denmark.....	15,000.00	
Chairmen of Committees and Sub-Committees.....	25,200.00	26,306.48	Finland.....	7,500.00	
			France.....	30,000.00	
			German Federal Republic.....	30,000.00	
			Iceland.....	15,000.00	
			Ireland.....	15,000.00	
			Netherlands.....	15,000.00	
			Norway.....	15,000.00	
			Portugal.....	15,000.00	
			Spain.....	15,000.00	
			Sweden.....	15,000.00	
			United Kingdom.....	30,000.00	232,500.00
II. Headquarter Staff			II. Interest		
General Secretary.....	15,000.00		On Bank Account.....	693.02	
Assistant Secretary (General) to $31/_{11}$ 1953.....	3,374.10		Less interest paid on Loan.....	551.56	
Assistant Secretary (Information)				141.46	
Miss M. REHDER.....	13,743.51		On Bonds.....	5,364.39	5,505.85
Assistant Secretary (Information)					
Mr. ULF KJÆR HANSEN from $1/_{11}$ 1953.....	3,927.27				
Statistical Secretary.....	10,631.97				
Secretarial Assistant.....	10,048.22				
Clerical Assistant.....	8,224.11				
Part-time Secretarial Assistant....	4,000.00	68,949.18			
III. Hydrographical Staff			III. Sale of Publications		
Hydrographer.....	18,105.57		17,103.31		
Clerical Assistant.....	8,224.11		Sale of Synoptic Charts ..	515.00	17,618.31
Assistance, and Card Index Work..	3,489.45				
	29,819.13				
Less Contribution received from Woods Hole Oceanographic Institution towards assistance with American Observations for Bulletin Hydrographique.....	1,500.00				
	28,319.13				
Synoptic Charts.....	6,218.02	34,537.15			
IV. Office Expenses					
Rent $1/_{11}$ 53— $31/_{10}$ 54.....	5,580.00				
Heating $1/_{11}$ 53— $31/_{10}$ 54.....	1,000.00				
Stationary.....	5,327.01				
Telephone, Telegrams, Postage.....	3,073.88				
Furniture and Fittings.....	2,135.70				
Insurance.....	932.70				
Upkeep.....	3,475.33				
Assistance.....	280.00				
Audit Fee $1/_{11}$ 51— $31/_{10}$ 52 D. kr. 400.00					
— — $1/_{11}$ 52— $31/_{10}$ 53 D. kr. 400.00	800.00				
Bank Charges.....	215.17				
Gratuities to Staff Members.....	819.00				
Expenses, Council Meeting 1953...	2,376.29				
Tea and Coffee to the Staff.....	698.02				
Directories, Binding of Records and Books, Minor Repairs, Soap, etc.	342.25	27,055.35			
V. Travelling Expenses					
General.....	5,191.33				
Special Hydrographical Meeting at Copenhagen, and Producing and Printing Charts showing Hydrographic Observations in the Norwegian Sea.....	5,000.00	10,191.33			
To carry over...		167,039.49	To carry over...		255,624.16

Income and Expenditure Account (continued).

EXPENDITURE		RECEIPTS	
	D. kr.		D. kr.
Carried over...	167,039.49	Carried over...	255,624.16
VI. Publications			
Printing	53,213.70		
Translations	475.98		
Distribution	1,065.95		
Editor, Journal du Conseil.....	3,000.00		
Assistance to Editor, Journal du Conseil.....	1,500.00		
Editor, Bulletin Statistique	2,000.00		
Editor, Fiches d'Identification du Zooplankton	1,000.00		
	62,255.63		
VII. Pensions			
Pension to Miss HANSTED ¹⁾	6,870.48		
Pension to Miss BRØNNICHE, from $\frac{1}{2}$ 1953 ¹⁾	7,353.00		
Premium, Pensioninsurance	5,200.36		
	19,423.84		
Less interest yielded by Pension Fund	5,875.40		13,548.44
VIII. Unexpended Vote, Publications			
Carried to Creditors 31 October, 1953			8,844.37
IX. Excess of Income over Expenditure	3,936.23		
	255,624.16		255,624.16

¹⁾ The difference between the amount of pensions and the amount of interest yielded by the Pension Fund has been paid as a subvention for the financial year 1952—53.

Balance Sheet 31 October 1953.

LIABILITIES		ASSETS	
	D. kr.		D. kr.
Capital Reserve.....	68,042.67	Cash at Sparekassen.....	134,000.00
Less difference between cost D.kr. 104,444.61 and proceeds of sale D.kr. 78,941.77 of D.kr. 95,000 bonds.....	25,502.84	Cash at Post Office	137.55
	42,539.83	Cash in hand.....	123.70
Excess of Income over Expenditure	3,936.23		134,261.25
Pension Fund.....	105,692.41	$4\frac{1}{2}\%$ Danish State Bonds, redeem- able in 1997, nominal value D.kr. 207,600, at cost D.kr. 172,308, market value 31 October 1953.....	176,460.00
Less difference between cost D.kr. 105,692.41 and proceeds of sale D.kr. 86,222.24 of D.kr. 108,000 bonds.....	19,470.17	Debtors, Offprints.....	283.65
Exchange Fluctuation Fund.....	9,845.23		
Creditors:			
Contributions 1953—54	151,667.00		
Sale of Publications 1953, on account	7,500.00		
Unexpended Vote, Publications, 1952—53	8,844.37		
Chairmen's Incidentals.....	450.00		
	311,004.90		311,004.90

(sign.) VILLY DESSAU.

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that

it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, November 20th 1953.

(sign.) KARL SØRENSEN,
Statsautoriseret Revisor
(State-authorized Accountant)

We have scrutinized the foregoing Accounts and Balance Sheet and are satisfied that they are correct.

(sign.)	A. T. A. DOBSON.	B. KULLENBERG.
	G. J. LIENESCH.	E. LELOUP.
	A. V. TÅNING.	A. E. J. WENT.
	B. DINESEN.	

II. The Central Office in Copenhagen.

General Secretary: The Bureau having decided unanimously that the General Secretary must be a scientist, if the interests of the Council are to be best served, have approved the appointment of Mr. ÅRNI FRIDRIKSSON as full-time General Secretary from 1 January 1954, to which date the present General Secretary, Mr. VILLY DESSAU, remains in office.

Staff: Miss E. BRØNNICHE, who had been in the Council's employ since 1 June 1924, retired as from 1 February 1953. His Majesty the King of Denmark has conferred upon Miss EBBA BRØNNICHE the Danish Silver Medal of Merit. This signal honour has given the greatest satisfaction to all Miss BRØNNICHE's friends and colleagues on the International Council. Miss M. REHDER, Dr. rer. pol., who has worked for the Council since 21 July 1926 is retiring during 1954.

The Bureau have appointed Mr. ULF KJÆR HANSEN, Mag. art.¹⁾, as Assistant Secretary (Information) from 1 June 1953.

An English-French-German stenographer has been employed during November and part of December 1952, since 1 May 1953.

In the Service Hydrographique two part-time assistants have been working since 1 November 1952, besides the Hydrographer and his full-time Assistant.

¹⁾ Mr. KJÆR HANSEN has resigned his post and will be leaving the Council's service for another post at the end of January 1954.

The staff members (and the part-time assistants) are:
Service d'Administration: Miss E. HEDEGAARD, (Miss MARIANNE KJELDSKOV).

Service Hydrographique: Mr. JENS SMED, Mag. sc. and Cand. mag., Mrs. P. HOLM, (Mr. P. ALNØE), (Mrs. I. BONDORFF).

Service d'Information: Miss M. REHDER, Dr. rer. pol., Mr. ULF KJÆR HANSEN, Mag. art., Mrs. H. HARDER.

Service Statistique: Miss E. CHRISTIANSEN.

Publications:

	issued	in preparation
Rapp. et Proc.-Verb.,		
Vols. No.	133, 134	135
Annales Biologiques,		
Vol.	VIII	IX
Journal du Conseil, Vol. XVIII, 3, XIX, 1		XIX, 2, 3
Zooplankton Identification Sheets	—	No. 50 a. f.
Bulletin Statistique, Vol. XXXV (1950)		XXXVI (1951)
Bulletin Hydrograph.,		
Vol.	—	for 1949, for 1950
Synoptic Hydrographic Charts	June 1952— May 1953	June and July 1953

Audit of Accounts:

The audited Account of Expenditure and Receipt for the financial year 1 November 1952—31 October 1953 and the Balance Sheet 31 October 1953 appear above.

REPORTS

of

AREA AND OTHER COMMITTEES

Northern Seas Committee.

North-Eastern Area Sub-Committee.

1952

By GUNNAR ROLLEFSEN

THE following countries: England, Germany, Norway and Scotland, have carried out investigations in the North-Eastern Area during the year. Finland and France report that no activity has taken place on their parts.

England

(G. C. TROUT).

Cruises of the "Ernest Holt".

Five cruises were made to the Barents Sea, four to the Bear Island bank in March, April/May, June and December, and one to the eastern banks in January/February. This reduced effort in the area was the result of diversion of the "Ernest Holt" to Greenland waters for two cruises in September and October/November.

The West Bear Island hydrographic section was carried out in March, August and December by the "Ernest Holt" and by the "G. O. Sars" in June whilst the former ship worked two sections (a) from Loppén to Cape Bull, Bear Island and (b) from position "J" on that section, to the deep water, 2,500 m. at the entrance of the Bear Island Channel. Plankton samples were taken simultaneously with routine hydrographic observations and silicate samples collected at a number of stations.

Other work carried out in the area included egg and larvae surveys in March and April/May in the West Spitzbergen and North Cape currents; the marking of 4,120 cod and codling in June at Bear Island; a bottom temperature survey and the beginnings of a plaice survey in the eastern areas of Barents Sea, during January.

Market Sampling.

Market sampling was continued on a relatively small scale at Grimsby.

Germany

(JOH. LUNDBECK).

The market analyses at Bremerhaven have been continued. The work was furthermore extended by scientific observations made during two German

trawler cruises, i. e., from 8. January to 1. February to Svinø and the Lofoten, regarding saithe investigations, and from 15. May to 14. June to the Finnmark-Bear Island deep on redfish investigations.

The following material was dealt with:—

Species	Length measurements	Age determinations	Maturity	Morphological measurements
Saithe	7,074	3,444	575	—
Redfish	4,584	502	295	120
Cod	4,450	1,823	—	250

Norway

(G. ROLLEFSEN).

Hydrography and Plankton.

See reports to relevant Committees.

Biology.

Cod. Investigations on cod (and haddock and redfish) were carried out in the spring on a two months cruise with the R/V "G. O. Sars" off northern Norway.

The sampling of material for the estimation of fluctuations in the stock of "skrei" was continued on approximately the same scale as in 1951. In the Lofoten area 50,904 cod were measured, and the age of 17,350 individuals was determined by help of the otoliths. In the Finnmarken area length observations of 36,562 individuals and otoliths of 4,594 individuals of the "loddetorsk" were taken.

The tagging experiments on cod were continued. 1,422 fish (caught by purse-seine) were released on the Lofoten banks in March.

Haddock. Sampling of material for an investigation of the age and growth of the haddock was carried out in the spring and autumn in a number of localities in northern Norway. Otoliths of a total of 7,411 fish were collected.

Tagging experiments on haddock were commenced for the first time in Norway, when on a cruise with the trawler "Thor Iversen" 400 haddock were released off the Finnmarken coast in November. Lea tags fixed with nylon through the back were used.

Herring. See the Herring Sub-Committee.

Other Investigations.

On a cruise with the R/V "Johan Hjort" in northern Norway in the months from August to October the investigations of the "baby"-groups of cod, haddock, saithe, and redfish were carried out as in previous years.

An investigation of the catfish (*Anarrhichas minor*) in northern Norway was started in the autumn 1952. Some material was sampled for the purpose of a preliminary investigation of methods of age determination in this species.

Scotland

(B. B. PARRISH).

In April and August 1952, "Explorer" made hydrographic and plankton observations in the southern part of the area, and "Scotia" took hydrographic and plankton samples in the latitude 61° N. in December. These observations were made during the course of extensive cruises over the northern North Sea plateau devoted to the studies of the hydrography of the northern North Sea and the distribution and dispersal of haddock spawning products.

North-Western Area Sub-Committee.

1952

By Å. VEDEL TÅNING

DURING 1952 the following research vessels have operated in the area:—

Denmark: M/S "Dana", M/C "Adolf Jensen", and M/C "Jens Væver".

England: S/S "Ernest Holt".

Iceland: M/S "Maria Julia".

Norway: M/S "G. O. Sars".

Scotland: S/S "Scotia".

Sweden: M/S "Skagerak".

Moreover several fishery inspection vessels, route vessels and chartered vessels have carried out collections of hydrographic and biological data, *inter alia* the Belgian fishery inspection vessel "Lt. Victor Billet", the Danish fishery inspection vessels "Thetis" and "Heimdal", the French frigate "Aventure", the German trawlers "Osnabrück", "Bonn", and "Heidelberg".

Biological reports and hydrographical observations are published in *Annales Biologiques*, *Bulletin Hydrographique*, and in national publications.

On hydrography, herring, plankton etc. see reports from the special committees.

Denmark

Faroes and Northern Waters (Å. VEDEL TÅNING).

The Faroe-Shetland section was worked by "Dana" from 31. May to 2. June; hydrographic observations were taken and in addition some hauls with 2-m. stramin-net and Hensen-net. During June (until 24. June) the research vessel carried out herring research work especially in the area north-east and north of the Faroes to east Iceland, in collaboration with the Icelandic research vessel "Maria Julia" and the Norwegian research vessel "G. O. Sars". Several sections were worked during this herring survey; hydrography and pelagic work (Hensen-net, stramin-net hauls and

phytoplankton net hauls) were carried out and the echo-sounder was constantly run along the sections. Records of herring shoals were reported to the fishing fleet. The different research vessels met in Seydisfjord for exchange of observations on 24. June. The Larsen floating trawl was operated north of the Faroes on 11. June by M/C "Jens Væver" and the Faroe cutter "Vestmanna".

In the Faroe area, proper, "Dana" carried out a fish larvae survey (2-m. stramin-net) and worked a few trawl stations.

From the Faroe area a collection of cod material was especially made at the fisheries laboratory in Thorshavn. Samples for age assessment were taken mainly from commercial catches from the area north of the islands ("Vågrund") and west of the islands in the spring and from other grounds in the autumn. A total of ca. 2,500 otoliths and ca. 6,250 measurements were obtained. Cod markings were also carried out, a total of 1,093 cod being marked, partly north of the islands, partly south-west and west of the islands. Some material of other fish (halibut etc.) were also collected. A survey of the occurrence of cod eggs was carried out during the months March-June, and studies of fjord cod races commenced. In addition age-determination material of halibut and herring was obtained.

During late June, in July and August the "Dana" was particularly engaged in research work off West Greenland (see report below). However, two important sections over the North Atlantic were also operated. The northern section, from Faroe to East Greenland along 62° N. Lat., was worked from 27. June to 4. July (18 hydrographic stations, at several of which stramin-net and Hensen-net were operated and phytoplankton samples taken).

The southern section, from Cape Farewell, South

Greenland, to the Channel, was worked from 14. August to 21. August; a total of 25 stations were performed on this section. Hydrographic observations were the most important part of the work, but on 8 stations stramin-net hauls were taken and on 4 Hensen-net hauls; also pelagic trawl was operated.

West Greenland Waters (PAUL M. HANSEN).

Offshore Work:

The "Dana" operated in the West Greenland area from 6. July to 12. August. The work was carried out from 57°15' N. Lat. to 70°58' N. Lat.

Hydrographic Observations were taken at 47 stations; temperature measurements with the bathythermograph at 32 stations.

Plankton. Pelagic hauls with the 2-m. stramin-net were made at 36 stations, vertical hauls with the Hensen-net were carried out at 24 stations.

Cod. About 1,500 otoliths of cod, taken with hand-line on 15 different stations over the offshore banks, were collected for age assessment and growth studies. A total of 1,545 cod were tagged on the offshore banks. Analyses of stomach contents were carried out.

Coastal Waters and Fjords:

The "Adolf Jensen" operated from April to October in the area from about 60°00' N. Lat. to 69°20' N. Long.

Hydrographic Observations were made at several stations in coastal waters and in the fjords.

Cod. Pelagic hauls with 1-m. stramin-net were especially taken in the Godthaab fjord and Ameralik fjord during the spawning season of the cod. Samples of small cod taken with hand-seine were collected at different stations along the coast. 2,453 samples of otoliths of cod were collected by "Adolf Jensen", while about 3,000 otolith samples were secured at different fisheries stations along the coast. 2,234 cod were tagged by "Adolf Jensen".

Herring. Fishing experiments with seine and drift-nets have been carried out in Sukkertoppen district in May and in Julianehaab district in August-September. Samples of otoliths and scales, together with measurements, were obtained. 144 herrings were tagged with yellow nocathene tags. 53 were marked in Sukkertoppen district, and 91 in Julianehaab district.

Salmon and Char. Samples of scales of salmon and otoliths of char together with length measurements were taken.

150 salmon in the parr stage, taken in a lake in Godthaab fjord, were tagged with nocathene and hydrostatic tags. A number of char were tagged with the same types of tags.

Greenland Halibut. In some fjords fishing experiments with long-lines were carried out. A few Greenland halibut were tagged with ebonite discs.

Deep-Sea Prawns (*Pandalus borealis*). Fishing experiments with a trawl were carried out in different fjords. Samples of prawns were collected for further

examinations. Samples of prawns were also taken from commercial catches in the Disko Bay in North Greenland and at Narssak in South Greenland during the whole fishing season, which in South Greenland covers the whole calendar year.

Belgium

(E. LELOUP).

During a summer cruise of the fishery protection vessel "Lt. Victor Billet" 24 water samples were taken around the Icelandic coast.

England

(MICHAEL GRAHAM).

Cruises. During the periods 4. to 16. September and 16. to 23. October the "Ernest Holt" worked in the Greenland areas of Cape Farewell to Cape Bille and in the Øst Bank and Cape Dan localities of the Denmark Straits respectively, in connexion with the newly developed English trawl fishery at Cape Farewell.

In the earlier cruise, surveys of banks were made by echo-sounder and trawl, and samples of cod were obtained for age determination and otolith studies—the latter in an attempt to determine to which of the Greenland stocks of cod the Cape Farewell shoals belonged. In this connexion a small number of cod, 256, were marked and released during the fishery, mostly between Cape Farewell and Sermersok, but 24 were released off Cape Bille. 1,706 cod were measured and 455 otolithed.

Hydrographic and plankton observations were made in relation to the distribution of cod shoals and two hydrographic and plankton sections were completed, stretching south-west across the Sermersok Bank and south-west from Cape Farewell. The latter had to be curtailed because of time lost by bad weather but none the less traversed the full width of the Irminger Current, which, with the sampling of the Arctic bottom water, was the main object of the sections. Bathythermograph lowerings were made at all hydrographic and plankton stations.

In addition to hydrographic and biological observations, sketches of the coastline were made in the vicinities of Cape Desolation, Sermersok, Cape Christian and Cape Bille, with bearings, soundings, and additional navigational data for the Hydrographic Department of the Admiralty.

During the second cruise work was hampered by persistent bad weather and the small amount of work possible was still further reduced by the development of a hull defect, which caused the premature return of the ship.

Weather Ships. Vertical hauls for zooplankton from 100 m. to the surface with a coarse silk net were made from the Ocean Weather Ships on station "I" (59° N., 19° W.). It was intended to take samples weekly from March, but bad weather and other causes reduced the number taken to 28.

Market Work. Otoliths from market sampling of Cape Farewell catches were obtained towards the end of the year, in order to continue the study of otolith types occurring in the Cape Farewell population.

Eire

(A. E. J. WENT).

No work carried out during 1952.

France

(J. ANCELLIN).

The frigate "Aventure" worked several hydrographic stations off the West Greenland coast during a cruise from March to October; observations were carried out to a depth of 500 m.

Germany

(ADOLF KOTTHAUS).

Work at Sea. In 1952 observations were made from fishing vessels, because a research vessel was not yet in operation. Four cruises were carried out:—

- A. Off south-west Iceland with the trawler "Osna-brück", 3. to 24. March. Dr. U. SCHMIDT carried out investigations on saithe (*Gadus virens*) on which 2,360 measurements, 555 age determinations and 304 maturity determinations were made.
- B. Greenland.
 1. Trawler "Bonn", 10. June to 3. July. Professor, Dr. W. SCHNAKENBECK carried out the investigations.
 2. Trawler "Heidelberg", 10. June to 3. July. Dr. J. LUNDBECK carried out the investigations.
 3. Trawler "Bonn", 17. September to 10. October, Dr. ARNO MEYER carried out the investigations.

General fishery research work in Greenland was carried out, especially on cod (3,718 measurements and 80 morphological measurements) and on redfish (193 measurements).

Market measurements:—

	Length measurements	Age determinations	Morphological measurements
Cod	7,545	849	440
Haddock	7,639	—	—
Saithe	3,375	6,780	—
Redfish	4,813	1,400 ¹⁾	—

¹⁾ Including 599 otoliths from West Iceland, secured by Dr. ÁRNI FRÍÐRIKSSON summer 1952 in Akranes.

A paper on *Hoplostethus islandicus* nov. spec. has been published by A. KOTTHAUS (Helgoländer Wiss. Meeresunters., 4, 1, 1952).

Iceland

(ÁRNI FRÍÐRIKSSON).

Work at Sea. Three cruises were made during the year by the research vessel "María Julia". The first

one, which was devoted to plankton work off the south coast took place from 29. April to 8. May. Numerous hydrographic observations were also made during this cruise as on the later cruises. The principal aim of the second cruise was cod work, marking etc. Research work was carried out all around the country during 9. May to 24. May. Finally the last cruise was made in June (1. to 25.) in co-operation with R/V "Dana" and R/V "G. O. Sars", north and east of Iceland in order to search for herring and find out the hydrographic conditions. Several oxygen analyses were made on samples collected in deep water between Iceland and Jan Mayen.

Hydrography. A great number of observations were made, as already mentioned. Material collected since 1876 by the Meteorological Institution on the Isle of Grímsey was worked up in order to test the relations between hydrographic and meteorologic conditions and the ice drift. Thermograph recordings were made by some vessels on coastal as well as transatlantic routes.

Plankton. As usual a number of plankton samples were collected during the cruises, and several plankton indicator samples were collected and worked out during summer on Akranes, in connexion with drift-net fishing of herring.

Herring. See the report of the Herring Sub-Committee.

Cod. 36,901 fish were measured and 11,250 otoliths were sampled for age determination. The material was collected as follows (otoliths in brackets): 1. The Westman Islands 7,542 (2,185); 2. Keflavík 6,611 (2,809); 3. Reykjavík 1,800 (800); 4. Akranes 6,421 (2,423); 5. Húsavík 12,716 (1,222); 6. Onboard María Julia 1,811 (1,811). 2,030 fish were marked in 14 different localities. Besides this, material was collected for the first time in West Greenland waters where Icelandic trawlers were fishing; 19,781 measurements were made and 4,940 otoliths collected.

Saithe. 500 fish were aged by means of the otoliths and 5,600 were measured. All the fish had been taken in purse-seines off the north coast. Furthermore, more than 1,000 fish were weighed. Some few trawl-caught saithe were also aged.

Haddock. 800 fish which had been caught on hand-lines in Faxa Bay, and 596 haddocks from trawl catches were analysed for age by means of the otoliths. Furthermore 675 fishes were measured and 44 were tagged.

Redfish. 10,000 were measured and 1,000 otoliths were collected in Akranes during June–August for age determinations. Catch analyses were carried out and statistics of yield per unit effort were collected.

Other Fish. The following species were aged or measured: whiting (41), plaice 503 (170), lemon sole (133), dab (320), long rough dab (212), and some few others.

Holland

(B. HAVINGA).

No work carried out during 1952.

Norway

No report received.

Scotland

(B. B. RAE).

During 1952 eight cruises were carried out by the Scottish research vessel, "Scotia", in the area. The dates of these cruises are as follows:—

- | | |
|---------------------|------------------------------|
| 1. 5.-22. February, | 5. 6.-25. June, |
| 2. 5.-26. March, | 6. 4.-20. July, |
| 3. 3.-23. April, | 7. 30. August-30. September, |
| 4. 7.-22. May, | 8. 2.-21. November. |

Although bad weather frequently caused interruptions throughout the year hydrographic, plankton and trawling observations were carried out on each cruise. The Faroe-Shetland Channel hydrographic section was completed on cruises number 1, 4, 5, 6, and 8 while the section across the Wyville Thomson Ridge was worked on cruises 2, 4, 6 and 8. Intensive hydrographic and plankton investigations were carried out on the Faroe plateau on cruises 1, 2, 3, 5, and 8. The line of stations northwards from Enniberg was attempted on two occasions. In addition to the usual temperature and salinity observations the oxygen and phosphate contents of the water were studied on most of the cruises. Drift-bottles were liberated at specified points on all cruises.

Plankton observations were carried out on all cruises. The study of fish eggs and larvae on the Faroe plateau was continued.

Trawling on the Faroe plateau was mainly concentrated in February, March, June, July, and November. Measurements were taken of all fish caught and scales collected from haddock and lemon soles. Otoliths were collected from cod samples. Tagging was again carried out on haddock.

Cruise number 7 was planned to cover Iceland and Greenland waters but owing to an unfortunate mechanical breakdown the programme had to be abandoned after completing the section devoted to south Icelandic grounds. The work achieved included hydrographic, plankton and trawling observations.

Sampling of commercial catches from Faroe on Aberdeen fish market included measurements and the collection of scales of haddock and measurements of young halibut.

The results of these investigations are dealt with under their appropriate headings in *Annales Biologiques* IX.

Sweden

(A. MOLANDER).

Fishing experiments and fishery research work were carried out in June west of Shetland and the Hebrides on ling (*Molva*), age determinations were also carried out.

North Sea Sub-Committee.

1952

By C. E. LUCAS

IN 1952, for the second year, reports have been received from the various countries for the North Sea as a whole; their value has been increased by the receipt of a report from Germany, which country is already playing its part in co-operative work in the southern North Sea.

Information about the depletion of demersal fish stocks in the area continues to accumulate and it is now possible to establish with some precision the benefits which would be gained by the application of specific conservation measures—in particular, the benefits following the introduction of the minimum mesh limit of 80 mm., on the assumption that the fishing intensity over the area as a whole is not increased. A unique opportunity lies before the countries concerned to rationalize demersal fisheries in the North Sea to the benefit of all.

Comparative fishing tests and gear investigations are continuing to provide valuable data. In particular, underwater photography has demonstrated clearly

how the meshes of trawl and seine-nets remain wide open and how small unmarketable flatfish escape freely and undamaged from the cod-end.

Meanwhile, research work and the collection of statistics for the important herring stocks of the area is being intensified, and collaborative work is being arranged. Herring work is dealt with in the report of the Herring Sub-Committee, see pp. 21—24. Reports on results obtained during 1952 appear in the appropriate section of the *Annales Biologiques*.

The following reports have been received from representatives of the countries concerned.

Belgium

(E. LELOUP).

Hydrographical Observations were taken aboard the lightship "West Hinder", the fishery protection vessel "Lt. Victor Billet" and the fishery research vessel "Hinders". For details see the reports of the Hydrographical and Plankton Committees.

Fish Species. Every week, when hake from the Moray Firth was available, measurements of this fish landed at Ostend were recorded. This in order to enable us to determine the distribution of the cm. lengths and its variations throughout the year.

Shrimp (*Crangon vulgaris*). See the report of the Shellfish Committee, Crustacea. During the study on the biology of the shrimps, observations were carried out on the fish caught with the shrimp trawl. All fish are measured, counted and weighed per species. By doing this, we are able to determine the species of fish which frequent the Belgian coastal waters during the course of the year and also to establish the variations in their relative abundance.

Denmark

(A. J. C. JENSEN).

Work at Sea.

"Dana" operated in the North Sea from 25. April to 31. May and from 24. to 25. August. The routine survey along the lines R and S of the North Sea hydrographical programme was carried out during the period 26. to 30. April (hydrography, stramin-net and Hensen-net hauls etc.). The hydrography of the Bløden-Ground area was studied in April, May and August. Bottom sampling was carried out especially on Dogger Bank; about 250 samples were collected. Danish seine and different trawls were worked in various localities.

In collaboration with the English research trawler "Sir Lancelot", the "Jens Væver" carried out comparative fishery experiments from 18. to 25. September.

"Jens Væver" was used in October for quantitative and qualitative investigations on the stock of fish in the Horns Reef area; 23 stations were worked.

In the Waddensea the young-plaice trawl was used in June, August and October; 78 stations were performed.

Work on the Fish Species.

Plaice. The stock of young plaice in the Waddensea and in the Horns Reef area was studied as in previous years. Market measurements of plaice at Esbjerg amounted to about 25,000 and 677 were aged. 1,400 plaice were marked in the central North Sea. The study of the food of plaice in the central North Sea was continued.

Other Fish. During the cruises, measurements and material for age determination were obtained for several species.

England

(R. S. WIMPENNY).

Work at Sea.

The research ship "Sir Lancelot" made seventeen and the "Platessa" two cruises in the Committee's area in 1952. Of those of the "Sir Lancelot" five between January and March were devoted to surveys of the mortality and drift of plaice larvae in the southern North Sea, three were allotted to benthos work in the south Dogger area, three covered the

quarterly joint plaice trawling stations on the Texel line in March, July and September (the January observations being embodied in a plaice egg cruise), two were made to investigate the hydrographic structure of the Southern Bight in June and September and three others dealt with comparative fishing and Larsson trawl tests. In addition to these, there was also a plankton cruise off the NE. coast of England in June during which young-plaice-trawl hauls were made off the Yorkshire coast.

The two cruises of the "Platessa" were concerned with comparative fishing, the first being escape tests from different parts of a trawl, and the second a comparison with a Lowestoft commercial trawler.

Work on the Fish Species.

General. Studies of North Sea fish population dynamics have been continued and sufficient material has been obtained to permit provisional estimates to be made of the requirements for optimum fishing of North Sea demersal fisheries as a whole. Market sampling has been continued but with a slight modification of the method on the markets at Lowestoft and Grimsby to enable considerably more information to be extracted from the data.

Cod. Observations on the North Sea cod were restricted this year to the measurement of 39,106 made at North Shields.

Haddock. At Grimsby market 8,003 length measurements were taken in support of the Scottish research programme on this species.

Plaice. Further evidence was obtained from plaice egg and larva surveys in the Southern Bight on their vertical distribution, the stage at which the larvae reach the bottom and on diurnal variation in feeding. Observations on the rate of growth of plaice were made in the laboratory.

Work on the I-group plaice was again carried out in shallow water off the Yorkshire coast in June, and in collaboration with the Dutch the spread and density of plaice seaward from the Dutch coast was investigated periodically.

The age determination of the adult plaice has been continued and 150 fish per month each from Lowestoft and Grimsby were examined, making a total of 3,600 for the year. In addition to this, over 1,500 age determination samples were made at Hastings, and the following market measurements were obtained:—Grimsby, 39,833; Lowestoft, 146,008.

Investigations into the food and feeding habits of the plaice included the collection of benthic animals, fish stomachs and plankton on the Dogger Bank. A start was also made in studying the microbenthos in order to relate the distribution of benthic components to their feeding conditions.

Sole. Samples of this fish have been examined quarterly at Lowestoft; these were measured and sexed and their otoliths and vertebrae preserved for age determination. In order to facilitate the age estimation experiments on the staining of the vertebrae were begun.

France

(J. ANCELLIN).

Travaux en Mer.

Des marquages de harengs et des observations océanographiques courantes ont été effectués en collaboration avec les Belges, dans la région des Bancs de Flandre, en Janvier, à bord du bateau de recherches belge "Hinders".

Des pêches de plancton et des observations hydrologiques ont été effectuées à bord du garde-pêche de Boulogne "Administrateur Ancelle", aux stations fixes mensuelles prévues au large du littoral compris entre la Somme et Dunkerque.

En Mai et Octobre des observations océanographiques ont été faites en Manche à bord du "Président Théodore Tissier".

L'avis de garde-pêche "Ailette", de la Marine Nationale, a effectué en Avril une section hydrographique de 12 stations entre le Dogger Bank et le Viking Bank; en Mai 4 stations entre le Fisher Bank et Brucey's Garden.

Les sections hydrologiques en Manche ont été poursuivies en collaboration avec les services du Ministère de l'Agriculture et des Pêches de Grande Bretagne.

En Novembre a eu lieu une sortie en mer à bord d'un chalutier de Boulogne en vue de poursuivre les observations sur les lieux de pêche du hareng dans le sud de la Mer du Nord et en Manche Orientale.

Espèces étudiées.

Des recherches concernant la maturité sexuelle et la composition du stock de merlans du sud de la Mer du Nord et de la Manche Orientale ont été poursuivies, ainsi que des recherches sur la taille, le poids, la maturité sexuelle et l'âge du maquereau de la Mer du Nord.

Une étude biométrique du thon rouge de la Mer du Nord a été faite, ainsi que de nombreuses mensurations de merlus provenant de la région d'Utsire.

Germany

(A. BÜCKMANN).

Work at Sea.

During a cruise of the research vessel "Gauss" from 26. February to 20. March, the following investigations were carried out in the area between the Dutch and English coasts: on the hydrographical situation ($S^{\circ}/_{00}$, $t^{\circ}C$., turbidity, nutrients, current measurements by paddle-wheels and from the anchored vessel), on plankton (quantity of seston, content of chlorophyll and albumen, fluorescence of the sea water, plankton countings) and on fish fry. The German Hydrographic Institution, the department of fishery biology of the "Max-Planck-Institut für Meeresbiologie" in Wilhelmshaven and the "Institut für Meereskunde" in Kiel took part in these investigations.

Cruises for investigations on fish fry were carried

out in addition by the "Max-Planck-Institut für Meeresbiologie" on 7. April and 21. to 25. on board "Starkenhorst" and "Uthörn" off the east-Frisian coast, and during the whole year at least once a month in the Jade area on board the shrimp "See-hund". Flounder larvae were met with in unusual abundance during April, eggs of sprat and sole during May.

The investigations of the "Biologische Anstalt Helgoland" on the effect of changes in the climate on the abundance and distribution of plankton organisms and fish fry, in the first place of summer spawning species (pilchard, anchovies, common sole, mackerel, horse mackerel) were continued. A cruise of "Uthörn" took place during June in the area off the German coast to $4^{\circ}30' E$. and $55^{\circ} N$. (catches with the Hensen egg-net at 64 stations). In addition catches with the Hensen egg-net and the Petersen young-fish-trawl were made on several other cruises of "Uthörn" during March-June and August-November in the eastern part of the German Bight.

Investigations with the cutter trawl and the Van Veen grab were carried out by the "Biologische Anstalt Helgoland" at 24 fixed stations in the German Bight during April-May and August-September.

The "Institut für Netz- und Materialforschung, Bundesanstalt für Fischerei", started investigations on the position of the trawl in action on commercial cruises of trawlers by means of specially devised measuring apparatus. On board light vessels observations were made on the rate of disintegration of cellulose in submerged samples of net cloth.

The "Institut für Küsten- und Binnenfischerei, Bundesanstalt für Fischerei", continued its investigations on the conditions of organic production in the brackish water area of German estuaries. 3 cruises of "Uthörn" were carried out to the Ems estuary in April and to the Elbe in April and December.

Work on the Fish Species.

Plaice. Age and growth census of the plaice stock in the German Bight in April-May and August-September. Length and age of 13,000 plaice determined. Investigation on the food of plaice in comparison with the quantity and composition of the bottom fauna ("Biologische Anstalt Helgoland").

Abundance of the 0-group of plaice and sole in the Waddensea area of the Jade to Spiekeroog. Feeding experiments with plaice in the aquarium. Distribution and abundance of plaice eggs and larvae during the "Gauss" cruise of February-March, and other cruises (Max-Planck-Institute).

Cod. A paper on biological-statistical investigations concerning the cod fishery of German cutters in the North Sea 1922-47 published. Investigations on distribution and abundance of cod fry during the "Gauss" cruise (Max-Planck-Institute). Market measurements on North Sea cod landings at Bremerhaven ("Biologische Anstalt Helgoland").

Saithe. Market measurements and age census of

North Sea saithe landings at Bremerhaven ("Biologische Anstalt").

Tunny. Investigations on the biology of the tunny which appear in the North Sea during August—October. Market measurements of the tunny landed by the deep sea cutters at Cuxhaven ("Institut für Küsten- und Binnenfischerei").

Report on the Development of the Electric Trawl (P. MEYER-WAARDEN).

The development of the electric trawl made good progress during 1952. The electric device was completed in cooperation with the working group of Dr. C. KREUTZER and H. PEGLOW with the Siemens-Schuckert works. Tests were made in the Kiel Bay in April 1952. The gear worked sufficiently in accordance with the theoretical calculations. Herring of 20 cm. in length were affected by the electric current within an area of 10 metres, cod of 40 to 45 cm. in length within an area of 20 metres.

The trawl designed for electric fishing in the sea was similarly developed in cooperation with the firm of Fahlbusch and Obergeringenieur SÜBERKRÜB. We used a gear of 80 feet in width which, owing to its special construction, opened approximately to a height of 9 metres. It can be towed from a vessel and adjusted to any desired depth. In this particular case it was used at 10 m. above the bottom, as the electric experiments with small fish (herring) had indicated a spherical attractive zone of about 10 m. in radius. Süberkrüb-trawl boards were used and, like the net, worked excellently.

The electrode was also developed. Attached to a marine cable it can be so directed that it lies exactly before the net mouth during fishing. Owing to the continuously bad weather we were unable to make the final experimental voyage before the end of the year; during this the device should have been tested together with the electro-trawl and the anode in practical fishing. We hope to be able to make these experiments in the spring of 1953.

Netherlands

(B. HAVINGA).

Work at Sea.

The Dutch work in 1952 has been a continuation of the work in the preceding years. The "Antoni van Leeuwenhoek" made 35 cruises throughout the year. 9 cruises have been devoted to investigations on the distribution and behaviour of plaice larvae, 12 to the routine trawling for the estimation of the density of the plaice stock, 1 to herring investigations and 13 to technical investigations on gear and equipment.

Work on the Fish Species.

All fish species caught in the routine trawling have been recorded, and the commercial species have been measured.

Plaice. The horizontal distribution of plaice eggs and larvae along the Dutch coast has been investigated

by means of the Hensen-net. The vertical distribution of the larvae has been studied with horizontal tow-nets. The routine trawling gave information on the density of the different year-classes, the growth and the distribution of the plaice in the Dutch coastal area. The plaice investigations were planned and performed in close cooperation with the English fisheries research.

Sole. All soles caught in the routine trawling have been measured, sexed and otolithed, in order to study the density, age composition, growth and distribution in the Dutch coastal area.

Fishing Gear. The investigations on the width and the height of the mouth of different trawl nets and on the strain in the warps have been continued. Further studies have been made on different types of echo-sounders.

Norway

Hydrography.

See Hydrographical Committee.

Biology.

Plankton Investigations have been carried out in the coastal waters of western Norway, see Plankton Committee.

Mackerel. Routine investigations on age and growth have been continued. Tagging experiments have also been carried out this year with success. In 1952 we got recaptures of some specimens which were tagged in 1951.

Sprat. Investigations on the recruitment of the stock in Norwegian waters were continued. The distribution of sprat larvae during early summer has been studied. The echo-sounder has been used to locate the shoals of 0-group sprat during autumn.

Scotland

(J. H. FRASER).

During the year the Scottish research vessels have worked extensively in the northern North Sea and Faroe Channel, on the Faroe plateau and also off the Scottish west coast with one cruise to the south coast of Iceland. It is regretted that engine trouble prevented the "Scotia" from completing the programme at Greenland in September.

Hydrographic and hydrodynamic studies of the Faroe Channel and its effect on the North Sea have been continued during the year. Drift-bottle returns were much greater than in 1951 and small-scale experiments with plastic drift envelopes have been carried out. Hydrographical and chemical observations in the northern North Sea were made to study hydro-biological relationships, particularly the distribution of herring larvae off the east coast of Scotland, and special attention has been paid to the Fair Isle and Fladen areas. Plankton investigations have been continued to study hydro-biological correlations and productivity factors in the sea. Assessments have

been made of the spawning of haddock and plaice and the mortality rates of larval fish populations, particularly of haddock and herring.

The collection of herring statistics started last year has been continued during 1952. The stocks on the various grounds have been estimated from commercial catches from the catches of the "Clupea" and otoliths have been used satisfactorily in the analyses. Tagging has been carried out on a larger scale than before, mainly with the Scottish "one man" tag, and the efficiency of various colours of tags has been examined. Tagging was also undertaken in co-operation with the Swedish M/S "Eysstrasalt". Extensive work has been carried out on the use of echometers and methods of identifying the various traces. These include underwater photography, ultra-violet and coloured lights, explosives, hydrophones and various types of high speed nets. (See Herring Sub-Committee's Report).

Investigations on haddock have been continued, in particular methods of integration enabling estimates to be made of the actual numbers of recruits to the stock have been worked out. Variations in the growth-rate of plaice in different areas; estimates of the effects on Scottish fisheries of the measures contained in the Overfishing Convention; and fish parasites are also included amongst the projects studied.

Comparison between efficiency of various types of lobster creels and the use of artificial baits has continued, and experiments on the oxygen requirements of lobsters under different conditions carried

out. The bottom fauna investigations in Aberdeen Bay and on Smith Bank have continued. Research on the efficiency of fishing gear has been undertaken, including comparative tests between various gears, towing strains, position at which young fish escape, etc. A film "Fish and the Seine Net" has now been released and this reveals much information about the reaction of flatfish to a seine net and the escape of young fish. Preliminary experiments on the electrical stimulation of fish have been initiated, at present devoted to sampling possibilities rather than to commercial application.

The Plankton Recorder Survey from the Edinburgh laboratory of the Scottish Marine Biological Association has continued as before (see report to Plankton Committee) and the herring/plankton investigations involving close collaboration between the Edinburgh and Aberdeen laboratories were continued.

In addition to the four Scottish research vessels "Scotia", "Explorer", "Clupea" and "Kathleen" the M/V "Silver Scout" has been available for part-time scientific research by courtesy of the Herring Industry Board.

Sweden

(A. R. MOLANDER).

Fishing Experiments (line fishery) and ling investigations in the western and eastern part of the southern North Sea (June).

Cruise planned for 1953. Similar investigations as in 1952 (May—June).

Publications.

The following publications (other than those in the Council's series) have been reported during the year:—

- ANON.: "Underwater photography of the seine net whilst fishing." *World Fishing*, **1**, 9, pp. 329—34, December, 1952.
- BAHR, K.: "Untersuchungen über den roten Thun (*Thunnus thynnus* L.) in der Nordsee." *Ber. Dtsch. wiss. Komm. Meeresforsch.*, N. F., **13**, 1, 1952.
- BÜCKMANN, A.: "Der Kabeljaufang der deutschen Kutter in der Nordsee 1922—1947." *Ber. Dtsch. wiss. Komm. Meeresforsch.*, N. F., **13**, 1, 1952.
- "Infektionen mit *Glugea stephani* und mit *Vibrio anguillarum* bei Schollen (*Pleuronectes platessa* L.)." *Kurze Mitt. a. d. Fischereibiologie. Abt. des Max-Planck-Instituts f. Meeresbiologie. Wilhelmshaven*, 1, 1952.
- "Vorläufige Mitteilung über Fütterungs- und Wachstumsuntersuchungen an Schollen." *ibid.*
- CRAIG, R. E. & BAXTER, I. G.: "Observations on the reaction to ultraviolet light of certain sound scatterers in the sea." *J. Mar. Biol. Ass. U.K.*, **31**, 2, pp. 223—7, 1952.
- FRASER, J. H.: "The Chaetognatha and other zooplankton of the Scottish area and their value as biological indicators of hydrographical conditions." *Mar. Res. Scot.*, 1952, 2, 1952.
- GLOVER, R. S.: "The Euphausiacea of the North-Eastern Atlantic and the North Sea, 1946—48." *Hull Bull. Mar. Ecol.*, **3**, 23, pp. 185—214, 1952.
- LUNDBECK, J.: "Einzelgewichte und Gewichtserträge von

Schollen der Deutschen Bucht." *Helgol. wiss. Meeresunters.*, **4**, 2; (*Ber. D.W.K. Meeresf. N.F. Beiheft 2*), 1952.

- McINTYRE, A. D.: "Statistics of the Scottish halibut fishery, 1930—1949." *Mar. Res. Scot.*, 1952, 1, 1952.
- "The food of halibut from North Atlantic fishing grounds." *Mar. Res. Scot.*, 3, 1953.
- PARRISH, B. B. & CRAIG, R. E.: "Echo sounding for herring." *Fish. News, Lond.*, 2048, pp. 9—10 and 2055, pp. 7—10, 1952.
- & JONES, R.: "Haddock Bionomics. I. The state of haddock stocks in the North Sea, 1946—50, and at Faroe, 1914—50." *Mar. Res. Scot.*, 1952, 4, 1953.
- PYEFINCH, K. A.: "Capture of pre-grilse stage of salmon." *Scot. Nat.*, **64**, 1, p. 47, 1952.
- RAE, B. B. & WILSON, E.: "Occurrences of rare and exotic fishes recorded in Scotland during 1951." *Scot. Nat.*, **64**, 2, pp. 102—111, 1952.
- TAIT, J. B.: "Hydrography in relation to fisheries." (*Buckland Lects.* 1938). *Edw. Arnold & Co., London*, 1952.
- WILSON, E.: "The spiny or thorny lobster, or crawfish, *Palinurus vulgaris* LATREILLE, in Scottish waters." *Scot. Nat.*, **64**, 3, pp. 151—57, 1952.

In addition, the following scientific publication has been issued by the Scottish Home Department:—"Practical hints to lobster fishermen." 1952.

Transition Area Sub-Committee.

1952

By AAGE J. C. JENSEN

THE main emphasis in the year's work has lain on regularly repeated hydrographic observations and quantitative and qualitative investigations on the fish stocks, with a view towards forecasting and the direction of fishing towards the optimal catch. In addition all other problems in the programme for the area have been studied at sea and in the laboratory. Of these the following may be mentioned.

Progress has been made in the hatching work at the Flødevigen laboratory (Norway), the fishery laboratory at Lysekil (Sweden) and the laboratory of the Institute for Fishery Investigations at Charlottenlund (Denmark). Microbiological studies of metabolism in the sea have been carried out at the Biological Laboratory, Oslo, and studies of the chemical and biological effects of sewage have been studied at the "Institut für Meereskunde", Kiel.

The periodical replacement of the teeth of bony fish and its relation with feeding, and the yearly cycle of fat metabolism in herring, sprat, mackerel, and cod have also been studied at the last-named laboratory.

The responses of sprat to light have been investigated experimentally at the Biological Laboratory, Oslo, and Germany has been studying the environmental factors influencing the yearly changes in the mackerel spawning in Kiel Bay.

Experiments with a bottom sledge for capturing the fauna close to the bottom have also been carried out at Oslo. In Denmark the catches by a trawl and by the eel-tog have been compared in order to replace the latter as a standard gear.

Denmark

(AAGE J. C. JENSEN).

Temperature and salinity observations, and in some cases oxygen content, were made in connexion with quantitative fishing from the research vessels.

Plankton.

Plankton samples have been taken, particularly in spring and autumn, in connexion with the quantitative fishing for fish larvae. The regular sampling of plankton from lightvessels was continued.

Benthic Food.

The quantity and quality of the invertebrate bottom fauna was investigated with bottom samplers in various waters.

The Fish.

Eggs and Larvae were investigated by quantitative fishing with the ring-trawl from "Biologen" during February—June and in October—December.

Cod and Whiting. The density and the size composition of the stocks were investigated by quantitative fishing. Most of the cod and some of the whiting were age-determined.

Flatfish. The density on the coast of the 0-group plaice, flounder, turbot, and brill was investigated during July—September by fishing from M/B "Havkatten" with the Johansen young-plaice-trawl. In deeper waters the density and age composition of the stocks of flatfish were determined by quantitative fishing, from February to December, with the eel-tog and a 50-foot trawl.

Samples of commercial plaice catches were examined at the laboratory or measured at fishing ports.

Also samples of the plaice transplanted from the Nissum Broad were analysed.

Eel. The stock was investigated by quantitative fishing inside coastal waters, and samples of the commercial catches were analysed at the laboratory.

Waste Fish. The composition of samples from the commercial fishery was examined. Quantitative and qualitative investigations, carried out from the research vessels "Jens Væver" and "Biologen", were made on catches with gears having different mesh sizes in the cod-end.

Mackerel. A small marking experiment (96 specimens) was carried out at Copenhagen in October.

Predictions of the yield of the mackerel and the silver eel fisheries were given on the basis of hydrographic-meteorological factors, and also on the yield of the plaice and cod fisheries from observations on the density of the stocks of undersized fish.

Oyster. The investigations were continued.

Germany

(R. KÄNDLER).

Work on the Fish Species.

Each month from March to August the distribution in Kiel Bay of fish eggs and larvae, and the larger plankton forms, was investigated, using the Hensen-net and the Petersen young-fish-trawl from the research cutter "Südfall" of the "Institut für Meereskunde" in Kiel. Seasonal cruises were carried out in the coastal waters (Schlei, Kieler Förde, Nord-Ostsee canal) in order to investigate the spawning and

the fry of spring herring. In this connexion the effects of outflow of sewage on the chemical conditions of the water, and on the biological conditions in the coastal water were specially investigated. At the laboratory, investigations were made on the periodical replacement of the teeth of bony fish, and on the yearly cycle of fat metabolism in herring, sprat, mackerel, and cod.

Cod. Comparative investigation on the body proportions with increasing size were finished.

Flatfish. Investigations were carried out on the frequency and occurrence of colour anomalies, and on the fecundity of various species of flatfish in the North Sea and the Baltic.

Sprat. The reproduction and growth in Kiel Bay was investigated and the variations in fat content due to season and age were recorded.

Mackerel. The yearly spawning in Kiel Bay was investigated and special regard was given to the hydrographical situation and the occurrence of the larger plankton at that time.

Norway.

Statens Utklekningsanstalt, Flødevigen

(ALF DANNEVIG).

Hydrography.

Observations on the temperature and salinity of the sea water were taken every working day at Flødevigen at 0, 1, and 15 m. below the surface. In the Skagerak and in the coastal waters up to Karmøy 333 hydrographic stations were worked.

Work on the Fish Species.

Eggs and Larvae. Material was collected from the Skagerak and the Oslofjord.

Gadidae. The 0-group. Experimental fishing with a beach-seine in the littoral region has been carried out according to the pre-war scheme, 71 hauls have been made on the Skagerak coast and 43 in the Oslofjord.

Older fish. Experimental fishing with traps has been carried on at Flødevigen. The hatching of cod was suspended but some experiments to rear cod were continued.

Flatfish. The experiments to rear plaice were continued.

Herring. Samples of herring have been collected from different parts of the Skagerak coast. Experiments to rear herring were continued.

Shellfish.

Lobster. Statistics from individual fishermen have been collected according to the pre-war scheme. The rearing of lobster was suspended. Some experiments to hatch eggs removed from the berried lobster were continued.

Oyster. A satisfactory number of spat was collected in the artificial pond at Flødevigen.

Biological Laboratory, University of Oslo

(JOHAN T. RUUD).

Staff members of the Biological Laboratory (sections A and B) have continued investigations in the Oslofjord along the following lines:—

1. Studies in microbiology, especially of bacteria and their rôle in the metabolism of the fjord. Various problems of pollution by sewage have been raised and claim increased interest in the future research program (Mrs. SØMME, Dr. C. OPPENHEIMER, U.S.A.).
2. Study of the behaviour of sprat under artificial illumination has been taken up (Mr. DRAGESUND).
3. Continued experiments with a bottom sledge, intended to catch the fauna living close to the bottom, have been carried out (Mr. BEYER, Mr. OLSEN).
4. In the various cruises, routine observations of temperature, salinity, oxygen and nutrients have been made (Dr. FØYN).

Sweden

(ARVID R. MOLANDER).

Hydrography, see Hydrographical Committee.

Work on the Fish Species.

Gadidae. Statistics of the landings of haddock in Göteborg have been collected for the study of changes in the fish stocks.

Flatfish. Statistics of the landings of plaice and witch have been collected, as for the cod.

Experiments on the influence of some ecological factors on the establishment of environmental forms of plaice have been continued, and the first parts of the experiments have been finished.

Sprat. Statistics of the landings of sprat along the west coast, giving information on fishing grounds, gears etc., have been collected. During the fishing season the relations between the meteorological and hydrographical conditions and the fishery have been closely studied.

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Baltic Area Sub-Committee.

1952

By CHR. HESSLE

REPORTS of work carried out have been received from Denmark, Finland, Germany and Sweden.

Denmark

(AAGE J. C. JENSEN).

The S/S "Biologen" worked in the Møen region to the south of Scania and round Bornholm in August—September; M/B "Havkatten" on the coast of Seeland and Møen in September. The research cutter "Jens Væver" fished on the salmon grounds between Gotland and the Russian-Polish coast in January, February and November—December.

Hydrography and Plankton.

Hydrographical and plankton observations were made from the "Biologen" and also fortnightly at a fixed station at Christiansø.

Biology.

Plaice, Flounder and Turbot. Quantitative fishing experiments with the Johansen young-fish-trawl were carried out from the "Havkatten" and with the hand-push-net at Bornholm. The stock of older fish (and of the dab) was investigated by quantitative fishing from the "Biologen". Market measurements of plaice were carried out at Bornholm.

Cod was also investigated in the fishing from the "Biologen".

Herring. Commercial catches were analysed for length, age, maturity, racial characters etc.

Salmon. Measurements and age determination of salmon and experimental fishing with hooks of different sizes were carried out from "Jens Væver".

Finland

(E. HALME, G. GRANQVIST).

Hydrography.

For hydrographical observations, see Hydrographical Committee.

Plankton.

Plankton samples from fixed stations in Denmark, Finland and Sweden have been analysed. The plankton in Bredviken in Helsingfors has been investigated.

Biology.

Quantitative investigations on the stock of fish have been carried out near Helsingfors. Investigations have been started on the influence to the economy of the fishery by pollution of the water in the Halikko Bay outside the village of Salo.

Herring. Investigations on the biology of the herring in Kvarken were continued. In the archipelago of Pernå an investigation was carried out on the correlation between the migrations of the herring shoals and the thermal stratification of the water.

Benthic Food etc. The following investigations have been going on:—

The ecology of *Bosmina maritima*, the microfauna of the sandy bottom, the correlation between the salinity and the extension of different animal species in the Baltic, the microfauna at the bottom of Bredviken in Helsingfors, the biology and ecology of *Leander adpersus* and the *Idothea* species, the occurrence of *Turbellaria* species in the Bay of Finland.

Germany

(R. KÄNDLER).

Biology.

Plaice, Flounder and Cod. Comparative investigations on commercial catch samples from the Bornholm Deep and the Danzig Bight were carried out for age composition, density of the stock and the fecundity of flatfish species.

Herring. The annual fluctuations of the fat contents of the herring in catches from the Bornholm Deep and the Danzig Bight were investigated.

Salmon. The salmon fishery with floating lines, from harbours on the east coast of Schleswig-Holstein, gave rise to investigations on the size and composition of the catches by this fishery.

Sweden

(CHR. HESSLE, F. KOCZY).

The research vessel "Eystrasalt" was kept in commission from August to December and the cruises were extended from the southern part of the Baltic to the Gulf of Bothnia. The research vessel "Skagerak" made two cruises in the central and southern Baltic in January and March.

Hydrography.

Daily hydrographical observations were made from six lightships.

In March and August hydrographical observations were carried out in the deep basins of the central Baltic.

Plankton.

From the lightships "Hävrings" in the central Baltic and "Finngrundet" in the Bothnian Sea, plankton samples were collected with Hensen-nets twice a month.

In the Bothnian Sea investigations were undertaken on the extension of the disease on *Eurythmora hirundoides* which was observed for the first time in 1950.

Biology.

Plaice and Flounder. Measurements of commercial catches were carried out on the southern coast of Sweden.

Herring. Some few samples were taken and analysed for length, age, maturity and racial characters.

Salmon. (See report to the Salmon and Trout Committee.)

Aids to Fishing.

The research vessel "Eystrasalt" has been commissioned principally for locating herring shoals with the echo-sounder and for fishing experiments with pelagic trawls etc.

Comité Atlantique.

1952

Par JEAN LE GALL

AU cours de l'année 1952, l'Espagne, la France, l'Ecosse et l'Irlande ont contribué activement aux travaux d'hydrologie du Conseil International pour l'Exploration de la Mer avec les navires de recherches "Xauen" (Espagne), "Président Théodore Tissier" (France), "Explorer" (Ecosse) et le bateau feu "Conigsbeg" (Irlande), en procédant régulièrement à des observations hydrologiques et à des pêches planctoniques.

Les recherches sur la biologie des animaux marins comestibles ont porté principalement, mais non exclusivement, sur trois espèces importantes pour l'économie de la pêche dans le secteur du Comité Atlantique: la sardine, le germon et le merlu.

Grâce à l'esprit d'étroite collaboration qui les guide, elles contribuent à une meilleure connaissance de la biologie de ces poissons: les conséquences pratiques des résultats déjà acquis sont maintenant indéniables.

Les contributions des différents états à l'activité du Conseil International dans le secteur du Comité Atlantique ont été brièvement résumées dans le présent rapport.

I. Hydrologie.

Angleterre	} Pas d'observations dans le secteur du Comité.
Belgique	
Danemark	
Portugal	

Espagne.

En Février et Mars, campagne du navire de recherches "Xauen" dans la région du Détroit de Gibraltar.

En Juin et Août, deuxième campagne du "Xauen": Détroit de Gibraltar, Golfe de Cadix, côte ouest du Portugal, côte de Galice et côte Cantabrique.

Opérations:—Stations hydrologiques. (Relevés de températures. Prélèvements d'eau pour analyses: chloruration, oxygène, phosphates; entre 0 et 500 m.).

Sections hydrologiques de long du 43° N. jusqu'au 11°30' W. Gr., puis, sur les méridiens 4°, 6° et 8° W. Gr. depuis la côte jusqu'au 45° N.

Prospection avec stations hydrologiques de la riche région sardinière entre Santander et la Province des Asturies.

Observations régulières périodiques des Laboratoires Maritimes de Vigo, Santander et San Sebastien. (J. CUESTA).

Ecosse.

En Juin 1952, prospection, par le navire de recherches "Explorer", des eaux atlantiques au large de la côte ouest d'Ecosse, jusqu'au 10° W. Gr., depuis l'ouest de l'Île Fair jusqu'au nord-ouest de la côte d'Irlande. (C. E. LUCAS).

France.

Campagnes du "Président Théodore Tissier"; avec la collaboration des thoniers "Patron Couvelard" et "André Rolland", des vedettes de la Marine Marchande et de bateaux sardiniers.

Observations hydrologiques habituelles: Relevés de températures, prélèvements d'eau entre la surface et 400 m. dans le secteur compris entre 37° et 48° N. depuis le Golfe de Gascogne et la côte ibérique jusqu'au 29° W. Gr.

Une attention spéciale a été portée sur les conditions de milieu des pêcheries de thon blanc (*Germo alalunga* Gm.).

Sorties en Février et en Avril, puis en Juillet—Août et Septembre sur les pêcheries de sardines (*Sardina pilchardus* WALB.) du Golfe de Gascogne. Observations hydrologiques habituelles.

Lancers de bouteilles dérivantes pour l'étude des courants de surface. (P. DESBROSSES.)

Maroc. Quatre campagnes océanographiques ont été effectuées par l'Institut des Pêches avec les avisos de la Marine Nationale et le garde-pêche, dans la zone du plateau continental marocain et la région du détroit canarien, entre le Cap Spartel, le Cap Juby, le banc Conception et les îles Canaries.

Températures observées et échantillons d'eau de mer prélevés à 5, 10, 25, 50, 100, 200 et 400 m. le long de 17 radiales, à raison de 4 à 6 stations par radiale.

A.O.F. Relevés de température dans la région du Cap Vert et du Golfe de Guinée.

A.E.F. Observation sur la température dans le secteur de Pointe-Noire et du Cap Lopez.

(J. FURNESTIN.)

Irlande.

Continuation des relevés journaliers de températures de surface à bord du bateau feu "Conigsbeg", au large de la côte SE. d'Irlande. (A. E. J. WENT.)

II. Plancton.

Angleterre	} Pas d'observations dans le secteur.
Belgique	
Danemark	
Irlande	

Espagne.

Nombreuses pêches de plancton effectuées au cours des campagnes du "Xauen" et des sorties périodiques des laboratoires maritimes du nord et du nord-ouest, avec comme principal objectif la recherche des œufs et larves de Clupéidés.

Ecosse.

Pêches fréquentes effectuées au cours des sorties de l'"Explorer". (C. E. LUCAS.)

France.

Des pêches régulières de plancton en surface et en profondeur ont été effectuées au cours de toutes les sorties des navires armés ou utilisés par l'Office Scientifique et Technique des Pêches, en particulier sur les pêcheries de germons et de sardines.

Pêches planctoniques habituelles sur les gisements coquilliers des côtes de France. (P. DESBROSSES.)

Maroc. 350 échantillons de plancton de surface ont été prélevés entre Tanger et les îles Canaries, au cours de 4 campagnes trimestrielles. L'étude du zooplancton est poursuivie au laboratoire de l'Institut des Pêches. (J. FURNESTIN.)

Portugal.

Etude du plancton de la lagune d'Obidos. (39°24' N.). Liste des espèces rencontrées: Diatomées, Périidiniens, Tintinnides par E. DE SOUSA E SILVA (Rev. Fac. Ci. Lisboa). (A. RAMALHO.)

III. Bathymétrie et Sédiments.

France.

Dragages et sondages ultrasoniques sur les hauts fonds au large du plateau continental au cours des campagnes du "Président Théodore Tissier".

Maroc. Relevé topographique de la zone côtière de Mogador d'une part et du secteur compris entre Moulay-Bou-Selham et l'embouchure du Sebou d'autre part. (J. FURNESTIN.)

IV. Biologie.

A. Clupéidés.

La Sardine (*Sardina pilchardus* WALB.).

Espagne. Continuation des observations habituelles par les laboratoires de Vigo, Santander et San Sebastien.

France. Observations systématiques sur les divers lieux de pêche et au débarquement du poisson.

La pénurie de sardines constatée une fois de plus en 1952 est attribuée, comme les précédentes, à la disparition des sardines pendant dans le sud du Golfe de Gascogne. (R. LETACONNOUX.)

Algérie. Rapport non reçu.

Maroc. L'étude de la sardine, des sardinelles et des aloses a été poursuivie au Maroc. Celle des sardinelles et ethmaloses a fait l'objet d'observations aux laboratoires de Dakar (A.O.F.) et de Pointe-Noire (A.E.F.). (J. FURNESTIN.)

Portugal. Examen hebdomadaire d'échantillons prélevés à Leixoes (41 éch. 8,128 sardines) et à Lisbonne (53 éch. 10,458 sardines), au point de vue: taille, engraissement, état de maturation sexuelle, âge, croissance, moyenne vertébrale.

Mensurations (taille) d'échantillons quotidiens à Portimao (8,000 sardines d'Août à Novembre).

Détermination de l'équation reliant la longueur de la sardine à celle de l'écaille. La nouvelle constante trouvée (30 mm.) est légèrement inférieure à celle trouvée en 1930 (37 mm.).

Etude microscopique des ovaires, en vue de mieux préciser les limites des stades successifs de maturation sexuelle couramment employés. (A. M. RAMALHO.)

B. Scombridés.

France. Continuation de l'étude biométrique et de l'écologie des maquereaux (*Scomber scombrus* L.) de la Mer du Nord. (C. NÉDELEC.)

C. Thonidés.

France. Plus de 2,500 germes (*Germo alalunga* GM.) ont été mesurés à bord des navires "Président Théodore Tissier", "Patron Couvelard" et "André Rolland" ayant participé à la campagne de prospection de Juin 1952. D'autres mensurations ont été faites à terre. Cette campagne a prouvé que la pêche industrielle du germon peut débiter un mois plus tôt.

Prélèvements d'écailles pour détermination de l'âge. Etude des conditions de milieu sur les pêcheries. Marquage de germes. (J. LE GALL.)

Maroc. Les recherches portant sur la biologie des Thonidés africains ont été continuées au Maroc ainsi qu'au Sénégal. (J. FURNESTIN.)

D. Gadidés.

Morue (*Gadus callarias* L.).

France. Observations hydrologiques, biométriques et biologiques dans la région de Terre Neuve. (Transmises à la Commission Internationale de l'Atlantique Nord Ouest).

Merlan (*Merlangus vulgaris* L.).

France. Continuation des observations sur la biologie de ce poisson.

Irlande. Travail commencé en 1952 sur la biologie du merlan de la Mer d'Irlande et de toute la côte d'Irlande. Prélèvements à bord des bateaux de pêche d'écailles et d'otolithes pour la détermination de l'âge.

Merlu (*Merluccius merluccius* L.).

Les résultats des recherches faites au cours de l'année 1952 feront l'objet d'un "Troisième Colloque" du merlu lors de la prochaine réunion du "Comité Atlantique".

Maroc. Recherches nouvelles sur les Merlucidés (C. MAURIN). Recherches diverses sur les Sparidés (R. COUPÉ), les Triglidés (A. VINCENT), les Sciénidés (J. DARDIGNAC). Etude biométrique de l'encéphale des poissons du Maroc. (W. GEIGER.)

Belgique. Mensurations hebdomadaires à la minque d'Ostende de merlus provenant du Canal de Bristol, du sud-ouest de l'Irlande, et du Moray Firth (Mer du Nord). Résultats transmis à M. R. LETACONNOUX, chargé de les collationner. (E. LELOUP.)

France. Comparaison du matériel recueilli en Méditerranée, à Terre Neuve, avec celui du Golfe de Gascogne et de Mauritanie. (R. LETACONNOUX.)

Portugal. Continuation de l'étude biométrique comparative de *Merluccius merluccius* L. et *M. senegalensis* CADENAT. Note publiée par P. DA FRANCA (Notas e Estudos, Inst. Biol. Marit. Lisboa, N° 3, 1952). (A. M. RAMALHO.)

E. Poissons Divers.

Sole (*Solea vulgaris* QUENS.).

200 soles marquées à titre expérimental à La Rochelle. (France).

A.O.F. et A.E.F. Etudes sur la faune marine de l'Afrique inter-tropicale.

Faune.

Liste des poissons capturés dans les eaux irlandaises jusqu'à 180 m. de profondeur (sous presse) (Irlande). (A. E. J. WENT.)

F. Crustacés et Mollusques.

Continuation des recherches sur la biologie de *Pecten maximus*.

France. En rade de Brest, extension des recherches à *Chlamys varia* (La Rochelle). De nombreux marquages ont été effectués.

Irlande. En Baie de Bantry et Connemara (Co. Galway), un matériel abondant a été recueilli et est à l'étude.

Les rapports concernant les travaux sur les huîtres, les moules et sur les Crustacés ont été transmis au "Shellfish Committee".

G. Algues Marines.

France. Continuation de la prospection des champs d'algues industrielles sur les côtes de France. Préparation de cartes algologiques.

V. Cartes de Pêches.

Espagne. L'étude de la région située entre le Cap Ghir et le Cap Barbas a terminé les travaux de cartographie commencés en 1941 pour le lever de la carte de pêche de la côte saharienne espagnole.

Maroc. Etude hydrologique et bathymétrique des lagunes de Sidi-Moussa et de Moulay-Bou-Selham. (J. FURNESTIN.)

Pelagic Committee.

Herring Sub-Committee.

1952

By ÁRNI FRÍÐRIKSSON

I. ATLANTIC WATERS

Iceland

(ÁRNI FRÍÐRIKSSON).

During the period from the end of April to the end of June cruises were made by "María Júlía". In April and May planktonic herring larvae were collected off the south and west coasts of Iceland and adequate hydrographical observations were made. The Icelandic part of the international herring programme in the waters between Norway and Greenland were carried out in June. The waters west and north of Iceland and the area between north-east Iceland and Jan Mayen were investigated. Echo-soundings for herring, and routine plankton and hydrographic work was carried out. The research vessels forming the team:—"Dana", "G. O. Sars" and "María Júlía", met in Seydisfjord on 25. June in order to compare the findings and compile a short report.

During July and August 1949 large herrings were examined in Siglufjord for length, sex, weight, maturity, and intestinal fat. The total number of vertebrae (VS) was counted and scale samples were collected for later determination of age, type etc. Otoliths for racial analyses were also collected. In all cases the weight of the gonads was recorded and the

maturity factor ($M = \frac{100w}{W}$) calculated. Some of the samples examined had been taken far off-shore, east of Iceland. Furthermore 358 small herrings were examined. 300 herring stomachs were investigated for food content.

In Reykjavík 3,699 herrings were investigated during July—November. The samples originated from the south and south-west coasts. Otoliths were collected for age and race investigations.

For the purpose of herring tagging a small motor-boat "Audbjörg", 15 br. reg. tons, was chartered during July—August. 17,308 herring were tagged off the northern and eastern part of the coast. Only 5 tags were returned from the herring reduction plants. One of the herrings, from which the tags originated, had been liberated at Iceland in 1950, three at Iceland in 1951, and one at Norway in the spring of 1952.

Denmark

(Å. VEDEL TÅNING).

The international herring investigations in the waters between Norway and East Greenland were carried out on the same lines as in 1951 and the Danish sections north and north-east of the Faroes were occupied in the months of March, May, June, July, and November. The research vessel "Dana" worked the sections north of the Faroes to 65°50' Lat. N. during the month of June, recording by echo-sounding the distribution of herring in relation to the hydrographical conditions; plankton sampling was also carried out and drift-bottles liberated. The research vessel "Jens Væver" operated in the area from the beginning of May to the beginning of June, the pelagic trawl being used by this vessel and a Faroese vessel at a few stations. Moreover the Royal Danish inspection vessel "Thetis" secured hydrographic observations, asdic-records and echograms in the area in March, and July, and in late November, when the herring was met on its return migration to Norway in great quantities about 100 nautical miles north of the Faroes.

Samples of herring were secured in several localities by the "Dana" and "Jens Væver" for analyses in the laboratory.

Norway

(FINN DEVOLD).

General Work.

29 herring samples, comprising 5,342 individuals, were taken during the winter season 1952 for determination of age, growth, vertebrae etc. The age composition of the large and the spring herring for the years 1948—52 is given in *Annales Biologiques* 1952.

In June, the sea area between the North Sea, the Faroe Islands—Iceland—Jan Mayen—Spitzbergen—Bear Island and Norway was covered by a fairly dense grid of hydrographical sections through a combined survey undertaken by Denmark, Iceland and Norway. The "G. O. Sars" covered the northern part of the area. Temperature, salinity and oxygen observations were taken at all standard depths down

to 2000 m. On most of the stations plankton hauls were taken from 200 m. to the surface, and samples of phytoplankton were taken at the surface, the 10 m. and the 25 m. depths. During the whole cruise the asdic and echo-sounder were kept in operation to record the occurrence of herring shoals and for depth measurements.

The hydrographical observations have been treated by Dr. JENS EGGVIN and the phytoplankton by Professor Dr. TRYGVE BRAARUD. The soundings will be treated at the "Norsk Polarinstitut".

In July and August special herring investigations were carried out from the "G. O. Sars" on the frontier of the East Icelandic Arctic Current. The herring shoals were located by use of asdic and echo-sounding. Fishing experiments were also carried out. 22 herring samples, comprising 3,875 individuals, were obtained in the open sea. The age composition is given in the *Annales Biologiques* 1952.

From late October to the end of January 1953 herring investigations, combined with hydrographical work, were carried out in the area north of the Faroe Islands. Also, this winter, the "G. O. Sars" succeeded in locating the herring shoals by use of asdic, and kept in contact with the shoals for the last 300 naut. miles of their spawning migration to the Norwegian coast.

Samples were also obtained of the herring which late in the summer and in the autumn seem to gather on the western and southern side of the Norwegian Channel.

About marking experiments see report by Mr. OLAV AASEN.

Herring Tagging (OLAV AASEN).

In all, 30,824 herrings were tagged on the Norwegian coast in 1952. Of these 10,295 were large herring, 12,158 spring herring, and 8,371 fat herring. 898 herrings were doubly tagged (internal steel tag and LEA's hydrostatic tag), 797 with LEA's tag only and the rest, 29,129 herrings with internal steel tag only.

The recoveries in 1952 amount to 491 tags:—

Taggings Year		No. of tags recovered
1948	Spring herring	25
	Iceland N. coast	9
1949	Norway spring herring	27
1950	Norway large herring	16
	Norway spring herring	12
	Open ocean herring	2
	Iceland N. coast herring	14
1951	Norway large herring	24
	Norway spring herring	72
	Open ocean herring	28
	Iceland N. coast herring	29
1952	Norway large herring	58
	Norway spring herring	50
	Norway fat herring	125

A report on the tagging has been issued in collaboration with Iceland, FRÍÐRIKSSON & AASEN 1952:

"The Norwegian-Icelandic Herring Tagging Experiments". Rep. No. 2 Atvinn. Haskol., Rit Fisk. 1952, Nr. 1.

Special Investigations (O. AASEN).

Observations on a local herring race in the Lusterfjord (a branch of the Sognefjord) have been continued. In all 2,634 herrings have been sampled. A report on this herring has been issued covering the period 1949—50. OLAV AASEN: "The Lusterfjord Herring". Rep. Norw. Fish. and Mar. Invest., Vol. X, No. 2, Bergen 1952.

A new herring tribe in the Østerbøvatn (a branch of the Sognefjord) has been investigated. A report on this herring, OLAV AASEN: "The Østerbø herring", is in print.

II. NORTH SEA AND ADJACENT WATERS

Belgium

(CH. GILIS).

1. During 1952, the study of the herring concentrations exploited by the Belgian herring trawlers has been continued (see Ann. Biol. IX):—
 - (a) The full-herring concentrations of the northern and central areas of the North Sea, from August till October (1,100 herrings).
 - (b) The spent-herring concentrations on the Belgian and French coasts,
 - i) in January and February, end of the season 1951—52 (692 herrings),
 - ii) in December, beginning of the season 1952—53 (324 herrings).
 - (c) The full-herring concentrations of the "Smalls" in August and September (230 herrings).

The observations cover all biological characters: length, weight, sex, stages of maturity, fat, age, vertebrae, keeled scales (K_2), stomach contents. In addition, a detailed study of the activity of the herring trawlers is given for each of the three groups.

2. During the two cruises (7/12 and 23/26 January) organized for the French—Belgian herring tagging experiments, water samples were taken on the spent-herring grounds.
3. Herring tagging experiments. These experiments were carried out on board the fishery research vessel "Hinders" in collaboration with the Fisheries Laboratory of Boulogne (France).

Two cruises were made (7/12 and 23/26 January). A total of 495 herrings were tagged (mainly off Dunkirk).

Denmark

(Å. VEDEL TÅNING).

Quantitative fishing with the 2-m. stramin net, to locate the spawning areas of herring and to investigate the density of herring larvae were carried out from the S/S "Biologen" in the Belt Sea and Sound in February, March, May, June, October, November

and December; in the Kattegat in March, April, June, November and December, and in the eastern Skagerak in March and November, but to a lesser degree than in the previous years, especially during the autumn. In April—May the "Dana" secured herring larvae in the south-eastern North Sea.

Investigations of age, length, maturity, race etc. were carried out (a) on adult fishes from the Fladen Ground, the Skagerak and the inner Danish waters, and (b) on young herring caught exclusively for processing on the "Bløden" ground, in the Waddensea at Esbjerg, in Skagerak and the inner Danish waters.

In the North Sea the young herring on the "Bløden" ground were sampled, especially during the winter period (about March) and during the summer-autumn period (from July to October). The hydrographic conditions in this area were studied in April—May and in late August by the "Dana", in September—October by the "Jens Væver".

Marking Experiments of 547 herring were carried out in the western Baltic and the southern Little Belt, and of 288 herring to the south-east of Fyn about April 1st. At Copenhagen 32 herring were marked on 22. October in connexion with the marking of a small sample of mackerel.

England

(D. H. CUSHING).

At North Shields 3,225 fish were examined for age, sex, length, and maturity; at Whitby 1,520 were so examined and at Lowestoft and Great Yarmouth 3,175 fish were examined.

Herring larval surveys were carried out in the Eastern Channel and the Southern Bight in January, February and March. Cruises by "Sir Lancelot" showed the rough distribution of larvae in the Southern Bight, but the cruises by "Platessa" over the spawning grounds were hampered by bad weather.

Work on the Larsson trawl has continued from the "Platessa"; her highest catch of seven crans was made on the spent herring in February. It is necessary to shoot the trawl on an echo trace in order to catch fish at all.

The triple frequency sounder was used on pilchard shoals and on an unidentified scattering layer in the western Channel in April, on cod shoals off Bear Island in June, and on herring shoals at Sandettié.

France

(J. ANCELLIN).

L'étude des populations de harengs du sud de la Mer du Nord et de la Manche Orientale a été poursuivie durant les campagnes de pêche d'hiver 1951—52 et 1952—53.

Elle a porté au cours de l'année 1952 sur la taille, l'âge, le stade sexuel et la moyenne vertébrale de 1,000 individus.

Des marquages de harengs ont été réalisés, en collaboration avec les Belges, à bord du chalutier de recherches belge "Hinders", au début de 1952, sur les Bancs des Flandres. Au total 595 harengs ont été marqués.

Germany.

Max-Planck-Institut für Meeresbiologie, Wilhelmshaven, Fischereibiol. Abteilung (A. BÜCKMANN).

1. The quantity, the stage of development and the distribution of the herring larvae have been investigated:—
 - (a) during the voyage of the "Gauss" February—March 1952 in the region off the Dutch coast,
 - (b) during the voyages of the "Uthörn" and "Starckenhorst" in April in the region off the east-Frisian coast and
 - (c) on regular cruises by the "Seehund" in Jade Bay during the whole winter and spring. Two publications are in preparation.
2. Routine-research on the number of vertebrae of the herring larvae have been made. In 1952 important differences in the state of ossification of herring larvae of similar size have occurred in the areas of the middle North Sea and the Flemish Bight.
3. Experimental research on the behaviour of the herring larvae, especially on their ability to select between layers of North Sea water, coast water and brackish water, have been commenced.

Institut für Seefischerei, Hamburg (W. SCHNAKENBECK).

1. Material earlier collected has been worked up (age determination).
2. The material collected on the voyage of the "Gauss" in August 1950 has been worked up. It concerns the investigation into the relation between plankton distribution, the catches of herring and the hydrographical conditions.
3. A cruise was made in the eastern Channel lasting from 25. Nov. until 5. Dec. The purpose was an investigation into the differences in quality between drift-net herring and trawl herring.

Institut für Küsten- und Binnenfischerei, Hamburg (P. F. MEYER).

Investigations on the oil-herring fishery were carried out in the south-eastern North Sea.

Institut für Meereskunde, Kiel (R. KÄNDLER).

Samples taken from the commercial herring catches in various areas of the Baltic have been examined as to length, age, maturity, and quality. The yearly rhythm of fat accumulation in spring and autumn spawners was analysed for its dependency upon age and reproductive cycle, and the relations existing between fat content, dry weight and coefficient of nutrition were established.

In the most important spawning grounds of the spring herring (Schlei, Kiel Bay, Kiel Canal) the spawning process and the growth of the brood were followed in their relations to the hydrographic conditions.

Holland

(B. HAVINGA).

During a cruise on the research vessel "Anthoni van Leeuwenhoek" in the North Shields area in September and during cruises with commercial vessels in the southern North Sea in November and December attempts were made to watch the diurnal vertical migration of single herring shoals on the echograph. In combination with these observations, hydrographical measurements and samples of water and plankton were taken.

Attempts to get samples of herring as nearly as possible from single shoals were again made. Special attention was paid to herring that were in act of spawning.

Each herring sampled was analysed for racial characters, age, sex, stage of maturity, length, l_1 and t values. These data are studied now with the purpose of getting more information on the existence of different races in the North Sea, the validity of the characters used to determine these races and the differences that might exist between different herring shoals.

Scotland

(B. B. PARRISH).

The programme of work followed in 1952 was on the same general lines as that outlined in the Administrative Report for 1951.

In January and February "Clupea" and the Herring Industry Board's vessel "Silver Scout" conducted a survey of the Firth of Forth area, but there was no evidence of any appreciable quantities of adult spring-spawning herring in the area.

During the period March–September, hydrographic–plankton–echometer surveys by "Clupea" and "Silver Scout" were conducted over the grounds fished by the drift-net fleets from Fraserburgh and Peterhead. Data collected on these surveys, and statistics of the daily landings of drifters at each port are being used in investigations of the relationship between herring abundance and environmental factors and of the distribution and behaviour of the fishing fleets. This work is being shared with the staff of the Scottish Marine Biological Association's Oceanographic Laboratory at Leith.

Sampling of the herring landed at each of the main ports on the Scottish east and west coasts and at Shetland was continued with the same intensity as in 1951. Data collected from these samples are being used in the analysis of the "racial" composition of the shoals in the different areas, and in estimations of the major population parameters. Work on the use of the herring otolith as a guide to "race" has been continued.

From mid-October to December "Clupea" and "Silver Scout" carried out further biological investigations off the west coast of Scotland, particular attention being paid to the distribution of adolescent and adult herring in the sea-lochs of the Minch.

Approximately 18,000 tagged herring were liberated during the year. Liberations were made from commercial fishing vessels, and the one-man "toggle attachment" was employed with the Scottish and Lea hydrostatic tags. The centres of tagging were at Shetland (3,000 liberations), the Moray Firth area (9,000), the Minch (4,000), the Coral Bank (1,300) and the upper reaches of the Firth of Forth (500); the herring tagged in the Firth of Forth were "half-lins". A total of 295 recaptures have been recorded to date. Amongst these are recaptures from the Fladen ground (155), the Dogger Bank area (16), the Southern Bight (3) and the Skagerak (2).

Experiments to determine the relative merits of different types of tag and tagging techniques were also conducted in 1952. These involved comparative tagging experiments off the Swedish coast in April, which were designed to compare the Scottish and Swedish tagging techniques, and liberations in the Scottish area of herring tagged with different colours of the Scottish "toggle tag".

Samples of the 0- and I-groups for racial analyses were taken from the nursery areas off the Scottish east and west coasts at intervals during the year.

Extensive larval surveys, designed to delimit the centres of spawning and the dispersal of larvae from the spawning grounds, were conducted in the north-western regions of the North Sea during the period July to December.

Fat estimations were made on daily samples of herring taken from the fisheries at Shetland and from Fraserburgh and Peterhead throughout the duration of the fishing season, and plankton fat estimates were taken during the course of the hydrobiological surveys over the north-east coast grounds. These data are being used in analyses of the variations in muscle fat content in relation to environmental factors.

Experimental work carried out during the year includes:—

1. Identification of organisms giving rise to echoes.
2. Experiments on the use of a horizontal echosounder for fish location.
3. The effect of artificial lights on fish concentrations.
4. Mesh selection of drift-nets.
5. Pelagic trawling experiments.

Sweden

(HANS HÖGLUND).

The following herring work has been carried out:—

1. Tagging experiments.
 - (a) In March–April some 500 herrings, mainly spring spawners, were tagged with the Lea tag

and liberated off the northern part of the Swedish west coast. Most of the taggings were made in collaboration with Mr. PARRISH, Aberdeen, in order to obtain comparison between the efficiency of the tagging method used in Sweden and the Scottish method.

- (b) In September—October 500 tagged fish were released on the Dogger Bank.
2. Fishing experiments with set-nets on rough bottoms were carried out in late August in the Fladen Ground area, with the view of procuring pure samples of spawning herring. The efforts were successful in position 57°25' N., 00°13' E., north

of Long Forties, at a depth of 69—77 m., and a sample of 450 fish was secured, out of which about 80 % were in stage VI with running roe.

3. During the year about 5,000 herring from the Skagerak and the North Sea have been analysed.
4. In March and April and the beginning of May investigations were made within a restricted area in the northern Bohuslän archipelago for the purpose of studying the spring herring before, during, and after the spawning process. Daily hydrographic observations were made and regular samples from the herring catches were analysed throughout the season.

Salmon and Trout Committee.

1952

By ARTHUR E. J. WENT

Denmark

(KNUD LARSEN).

Biological Investigations.

The biological investigations on trout and trout streams during 1952 were as follows:—

- (a) Tagging experiments. In 9 localities a total number of 5,010 trout were marked by cutting away one or two fins. Two of these experiments were carried out in connexion with liberation of brown trout directly into brackish waters.
- (b) Analysis of the stock of young trout by means of electrical fishing was continued in small trout streams in east Jutland and south Seeland. As in earlier experiments the stocks were found to be very dense, up to about 4 trout parr per sq. metre.
- (c) Investigations into the trout run as to the age composition were started in streams in Jutland and south Seeland.
- (d) The food of the sea trout. Investigations were carried out on trout kelts from the river Gudenå and on trout, caught by sport-fishermen from the sea-shore. About 400 stomachs were analysed.
- (e) The growth of the brown trout. Scale samplings were performed in different streams all over the country.
- (f) Liberations of trout directly into brackish water. In the Guldborg sound between the islands Lolland and Falster 1204 tagged brown trout, 1½ years old, were liberated in July. On the west coast of the island Bornholm 2,684 sea trout half-yearlings, marked by cutting away the adipose fin, were liberated in October.

- (g) Biological and ecological investigations of trout streams were performed in Funen.

- (h) Salmon investigations in the Baltic. Scale sampling and length measurements of salmon caught on hook and line from the research cutter "Jens Væver" have been continued and the investigations of the scales so obtained have been completed. It is hoped that a report on the work done from 1949 to 1953 will be published shortly.

England and Wales

(F. T. K. PENTELOW).

In 1952 salmon and sea trout were again tagged in the sea off the Welsh coast. The experiment began in March and bag-nets were fished until the end of April and from the beginning of June to 15. July. The fishing was almost a failure and only 5 salmon and 12 sea trout were caught and tagged. Four trout were taken in March, 3 salmon and 2 trout in April, 2 salmon and 6 trout in June and none in July. None of these fish have been recovered.

In view of the poor fishing at this place, in the middle of July operations were transferred to the Menai Straits at Caernarvon where fish caught in the sea by seine-nets by commercial fishermen were bought, tagged, and released. Between 9. and 30. July 62 salmon and 3 sea trout were tagged and liberated. Of these one sea trout and 9 salmon have so far been recovered all within 13 miles of the tagging station at varying intervals from 93 days downwards.

Kelt and Smolt Tagging.

During April and May sea trout kelt and salmon and sea trout smolts were tagged in the river Coquet in Northumberland, and the Scottish Home Department collaborated by tagging salmon and sea trout smolts in the river Tweed.

In the Coquet 659 kelt, 2,157 salmon smolts and 7,503 sea trout smolts were tagged. Of these 69 sea trout kelt, 1 salmon and 56 sea trout smolts have been recovered. Recoveries of sea trout (tagged as kelt) were made along the east coast of Great Britain from Kessingland in Suffolk to the River Tay, in the North Sea (54°13' N., 02°18' E. and 51°39'50" N., 03°19'12" E.) and south-west of Skagen (Denmark). Sea trout (tagged as smolts) were recovered mainly in Norfolk but also in the North Sea (51°39'50" N., 03°19'12" E.), off Skagen (Denmark), at Lindholmen Tønsbergfjord, Norway and in the Skagerak off the Swedish coast. Further recaptures were made in 1953 of sea trout tagged as smolts in 1951, all along the east coast but mainly in or near the River Coquet, although three recaptures were made in Norfolk and Suffolk.

Finland

(T. H. JÄRVI).

The following numbers (in 1,000) of salmon fry and one-summer-old parr have been liberated:—

Oulu River		Kemi River		Kokemäki River	
Fry	Parr	Fry	Parr	Fry	Parr
159.7	11.4	450.0	10.0	34.8	—

Two-summer-old parr were marked by fin-cutting and liberated in the rivers Oulu (3,850) and Kemi (3,500).

Thirty-three salmon were tagged with celluloid tags and liberated in the Oulu River (Numbers 201—234 and 291—5). Twenty fish were tagged and liberated in the Kemi River (Numbers 36—55).

France

(R. VIBERT).

Recherches Physiologiques et Biologiques.

Les recherches entreprises sont poursuivies. Les travaux de marquage commencés en 1951 ont été poursuivis en 1952:—950 smolts marqués en 1951 et 1980 en 1952. Trois smolts, un de 1951 et deux de 1952, ont été repris au large de la Bretagne, presque au même endroit, à 700 km. en moyenne du point de marquage, avec la même vitesse de croisière apparente (27 à 29 km. par jour).

Propagation artificielle du Saumon.

Faible récolte d'œufs en 1952—1953 (70,000) malgré un frai très important. 25,000 œufs ont été envoyés des Pyrénées en Normandie par chemin de fer (1,100 km.) sitôt après fécondation (green eggs),

en boîtes Vibert (gravel hatching box), puis placés avec les boîtes dans les graviers des rivières de Normandie. La mortalité au stade de l'embryonnement (eyed eggs), en rivière, n'a pas dépassé 7 % dans les boîtes pleines. Elle a atteint 100 % dans la boîte témoin à moitié pleine.

Prises de Saumons.

Très importantes en 1952 dans le bassin du fleuve Adour.

Publications.

- FONTAINE, M., J. LELOUP et M. OLIVEREAU: La fonction thyroïdienne du jeune saumon, *Salmo salar* L. (parr et smolt) et son intervention possible dans la migration d'avalaison. Arch. Sci. Physiol., 1952, 6, pp. 83—104.
- — Iodémie et thyroïdémie élevées des poissons téléostéens migrateurs amphibiotes. 11e Congr. Internat. de Chimie Biol., Paris 1952, Juillet, p. 53. Ed. Declume, Lons-le-Saulnier.
- — L'iode thyroïdien du jeune saumon au cours de sa smoltification. C. R. Acad. Sci., 1952, 234, pp. 1479—80.
- et R. VIBERT: Migration fluviale anadrome du saumon (*Salmo salar* L.) et gradient de salinité. Ann. Stat. Centr. Hydrobiol. Appl., 4, pp. 339—345.

Holland

(G. J. LIENESCH).

No investigations carried out in 1952.

Iceland

(THOR GUDJÓNSSON).

Scale samples of salmon and trout were collected for age analysis, growth studies, etc. as in previous years. Marking of smolts and tagging of kelt were continued. In the river Úlfarsá 582 salmon smolts were marked by fin-cutting (the adipose and the right ventral). In 1951 only 43 smolts were marked there. Kelt (297 in number) were tagged at four centres. Of these 211 were tagged in the river Ellidaar, 54 from the tributaries to the river Hvítá in Borgarfjörður district and 32 from three tributaries to the river Ölfusá-Hvítá in Árnessýsla district. In 1951, 155 kelt were tagged in the river Ellidaar. Forty-one sea trout smolts were marked by fin-cutting (115 sea trout were marked in 1951).

A survey was started on lake Medalfellsvatn and its population of brown trout and char. This lake is located 50 km. north of the city of Reykjavík.

Hatchery operations for salmon were carried out at five centres. In 1951 a privately owned station for rearing salmonoid fishes, the first one of its kind in Iceland, was operated for rainbow trout, the ova being imported from Denmark. In 1952 this station also reared salmon.

The salmon catch in 1952 was above average.

Ireland

(ARTHUR E. J. WENT).

Biological Investigations.

During 1952 investigations were carried out into the age and growth of salmon of the River Shannon and a paper on the subject has been published (Journ. Cons., 18, 3). Salmon tagging was again carried on at Rath in County Kerry (in the south-west of Ireland) and at Streedagh, County Sligo (in the north-west). The result for Rath was similar to those of the previous year except insofar as a number of long distance migrations were recorded to be from the west coast of Ireland. As for the fish tagged at Streedagh, the results were similar to those of previous year but they were disappointing as the proportion of recaptures (between 5—6%) was the lowest on record.

As in 1950/51 salmon tagging was carried on at places on the north coast of County Antrim in collaboration with the Ministry of Commerce, Belfast. The station at Portbraddan, operated in 1951, was again used and a new station at Carrick-a-rede a little farther east was opened. The vast majority of recaptures from these stations were made along the Irish coast from the Dundalk river to rivers entering Lough Swilly. A high proportion of recaptures were made in the river Foyle. Recaptures were also reported from the south-west coast of Scotland, at one place on the west coast and another on the east coast of Scotland, and at one place in North Wales.

During the year research work was continued on brown trout and their environment.

Artificial Propagation of Salmon and Trout.

Artificial propagation of salmon and trout was carried out as usual at a number of centres but owing to the low water experienced during the season it was difficult to capture parent fish in some localities. In consequence the output of brown trout fry was considerably lower than that of the past 15 years.

Returns of Catches.

Returns of catches were demanded as usual from every holder of a licence to fish for salmon and these returns are now being compiled. The figures for 1951 which are now available, indicate the catch in that year was approximately 1,300 tons or about one-third higher than the previous two years. In previous reports it has been mentioned that the export figures published monthly by the Department of Industry and Commerce for this country gave a reasonably good idea of the abundance of salmon. In 1952 exports amounted to approximately 880 tons compared with 1,116 tons in 1951 and 900 tons in 1950. During 1952 the runs of salmon were, generally speaking, good for most rivers until the end of April when they fell off considerably and the grilse season was considerably poorer than that of the previous

year. The decline in exports may be attributed to the reduced runs of grilse and summer fish during 1952 and not to a reduction in the number of spring fish.

Norway

(LEIV ROSSELAND).

River Control.

This year we controlled salmon and sea trout migrations in the Oselv river near Molde in addition to the two rivers, the Sandvika and the Istra, used in previous years. This year only the upstream migrants in the Oselv river were controlled, but later on we intend controlling also the sea-bound smolts and kelts of salmon and sea trout. Between 22. June and 15. November, 96 salmon and 629 sea trout were tagged in the Oselv river, and so far recaptures of 9 sea trout and 4 salmon have been reported.

In the Istra river the water level was extremely high during the period when the smolts were descending, and it was impossible to control them properly. Only a small number of fish were caught and marked. Control of the upstream migrants was also adversely affected by the high water levels, consequently only a small part of the stock passed through the control trap.

The Sandvika river was very low during the period of smolt migration, and the control was easy. The fish ran very late, and there were still some smolts in the river when the fence had to be removed on 15. June (the commencement of the fishing season). Altogether 718 salmon and 1,227 sea trout smolts were controlled at the fence. Four hundred and fifteen salmon and 592 sea trout smolts were tagged, partly with the Lea hydrostatic tag and partly with flat, celluloid-covered tags. So far four of the salmon smolt tags have been returned, one from the stomach of a garfish (*Ramphistoma belone*) sold in Belgium, one from a thorn bush in the inner part of the Oslofjord, and two from smolts caught in a stake-net in the same region. Twelve of the sea trout tags have been returned, all of them from the inner part of the Oslofjord. The total number of migrating smolts was estimated to be approximately 900 salmon and 1,500 sea trout. Between 6. June and 1. November the upstream migration was controlled in the salmon ladder at Franzefoss. Altogether 1984 sea trout and 28 salmon passed the trap. The water level has been continuously low throughout the summer and for long periods the salmon ladder (the trap site) has been dry so no fish could pass.

Taggings in the Sea.

The following tagging stations have been operated (south to north):—

1. Bag-nets near the mouth of the Oselv river near Bergen,
2. Bag-nets near the mouth of the Lærdal river in the Sognefjord,

3. Bag-nets at Kinn off Florø,
4. Bag-nets at Titran, the Frøya Island,
5. Bag-nets at Bjørøya in the district of Namdal, and
6. Bag-nets at Hovika near the mouth of the Namsen river.

Three of the stations, Os, Lærdal and Hovika are situated in the inner districts near the mouths of salmon rivers, while the three remaining, Kinn, Titran and Bjørøya are true coastal stations.

The inner stations. Between 4. April and 18. May, 50 salmon were tagged at the Os station. This is known as a very early station, and after 18. May tagging was abandoned because few fish were caught. Twelve of the 50 salmon were recaptured at the tagging station itself, the last on 12. June. Ten of these were killed, but two released and have not been heard of since. Two were recaptured in bag-nets in the sea. Ignoring the two fish released 34% of the tagged fish were recaptured. At the Lærdal station, situated about 5 km. off the river mouth, 24 salmon were tagged between 14. June and the end of August. Four were recaptured in the Lærdal river and four in the sea in the inner part of the Sognefjord (Leikanger and Balestrand), and one in another river near the station. The percentage recaptured was 37.5. At Hovika, near the mouth of river Namsen, 269 salmon were tagged. So far 94 have been recaptured, i. e. 34.9%. Only two have been caught outside the Nord-Trøndelag fylke, and no less than 34 recaptures were made in the Namsen river. A common feature from all the inner stations is that the migrations have been short and the percentage of recapture has been small. An explanation to this is that the greater portion of the salmon has entered the nearest river, where the fishing intensity has probably been low. As all those three stations are situated near the mouths of typical angling rivers, most of the fish have probably escaped capture.

The coastal stations. These stations exhibit an entirely different pattern of recaptures. At the Bjørøya station, only 20 miles distant from the Hovika, we find that out of 125 tagged salmon so far 55 have been recaptured (44%). The recaptures are scattered, only four in rivers and none in the adjacent Namsen river. At Titran 67 salmon were tagged and so far 30 recaptures have been reported (44.8%). The recaptures are more scattered than usual from this station and 9 recaptures are from rivers. At Kinn 157 salmon were tagged and so far 83 (52.9%) have been recaptured. Also from this station the recaptures are more scattered than usual. No less than eight were recaptured abroad. One in Denmark, three in Sweden, one in England and three in Scotland.

Tagging of Kelts.

Twenty-one salmon kelts were tagged early this spring in the Lærdal river, and only one recapture has been reported.

Scotland

(K. A. PYEFINCH).

It has again proved impossible to resume work on the major scheme of salmon research which was formerly carried out on Forss Water (Caithness), but progress has been made to this end and it seems likely that work will begin on this project in 1953.

Returns from the work carried out in 1949—50 still continue, however, to be received. During 1952 records of the recapture of 14 fish were received which were either marked in the manner used at Forss (removal of the adipose fin or removal of the left pelvic fin) or were tagged. Unfortunately only one of the returns was that of a tagged fish so it is only this individual that can definitely be identified as having come from Forss Water but the presumptive evidence in favour of a similar origin for the remaining 13 recaptures is strong. A feature of particular interest in these returns is that only 6 of them came from the mouth of the Forss, all the others were recaptured some distance away, chiefly from the Kincardineshire coast though some were re-taken in the Tay estuary and one in the river Tay itself.

A small tagging experiment was carried out late in April and early in May in which salmon were tagged at a netting station at Altens, which is situated on the Kincardineshire coast some two miles south of the mouth of the Aberdeenshire Dee. One hundred and twenty-seven salmon were tagged, of which 57 were recaptured. Though most of these recaptures came, as might be expected, from the Dee, a substantial proportion had migrated further; most of these longer-distance migrants had moved northwards but a few had migrated southwards. The results obtained from this experiment are of interest in demonstrating that by no means all the salmon occurring near the mouth of a major salmon river enter that river; they were also useful in providing further evidence of the proportionate recapture and of the time interval between tagging and recapture which supplements that obtained from the experiments conducted in 1950 and 1951 at Rockhall (Kincardineshire).

A further programme of sea trout smolt tagging was carried out on the river Tweed in May, which was designed to supplement a programme carried out by the Ministry of Agriculture and Fisheries on the river Coquet (Northumberland). The total tagged on the Tweed was 4 966 smolts. The results which have obtained so far entirely confirm those obtained from the 1951 experiment, in that most of the recaptures were recorded off the East Anglian coast. Further recaptures of fish tagged in 1951 have also been recorded. Practically all (52 out of 55) the recaptures of fish tagged on the Tweed in 1951 have come from various netting stations on the Tweed and these were spread over a period extending from March to September. There are therefore clear indications of a return migration from the East-Anglian coast to the Tweed and it will be interesting to see

whether any returns are received this year which will give any hint of the subsequent migrations of these fish.

The sea trout smolt tagging programme on the Tweed in 1952 was supplemented by a short salmon smolt tagging experiment. In this project 2,220 smolts were tagged, of which 1,260 were released in the estuary. The remaining 960 smolts were taken out to sea in one of the Department's research vessels, which carried suitable tanks for the purpose. They were released about 5 miles ESE. of Berwick.

A further kelt tagging programme was carried out on the Aberdeenshire Dee in November. When this experiment was planned, it was decided to try to tag as many sea trout kelts as possible (since interesting results had been obtained from the few tagged in 1950) and also to tag salmon grilse kelts so as to compare their mortality with that of the older salmon kelts tagged in 1949 and 1950. Unfortunately water conditions were all against effective netting and the breeding stock of both sea trout and salmon seemed to be below average. Consequently only 175 salmon kelts (mostly grilse) and 37 sea trout kelts were tagged. As it is unlikely that significant results will be obtained from so small an experiment, it is hoped that it will be possible to repeat it in 1953.

Much of the work of the Brown Trout Research Laboratory has been concerned with the field fertilization experiments which, as anticipated in last year's report, were carried out during 1952. The implementation of this project not only involved a continuation of the survey work which had been in progress for the preceding two years but also preliminary tests of the compounds used in the experiments and, subsequent to their addition, many additional water analyses, since it seemed necessary in the first instance to try and follow the chemical changes consequent upon fertilization in as much detail as possible.

It was decided to treat three of the four lochs that had been under detailed survey. One received calcium only, one calcium and phosphate and the third, phosphate only. The fourth loch (the most productive of the quartet) was left untreated since it represented a standard to which it was felt the others should be raised. The treatments were carried out during the summer and the results which have been obtained so far have, therefore, mainly lain within the chemical field. These have produced a number of points of interest, especially in the results following the addition of phosphate. In one loch (that treated with phosphate only) detectable amounts of phosphate were present for 4—5 months afterwards, whereas in one part of the loch treated with both calcium and phosphate, the concentration of the latter fell, within a few days of addition, to values below the limit of detection. This rapid decrease agrees with the results recorded by other workers, but in another part of the latter loch, however, appreciable amounts of phosphate could be detected for some time as in the former loch. It will be interesting to follow the biological

outcome of these chemical changes; in this connexion there were indications of an increase in the density of the phytoplankton population shortly after treatment in the loch which had received phosphate only. This increase has since been maintained.

Though much of the laboratory's effort has had to be devoted to the field fertilization project, other activities have not been neglected. Further work has been done on the biology of trout, including observations on the spawning runs and studies of the effect of silt on trout ova and alevins. Observations on the spawning runs have shown that the trout were in spawning condition some time before the run began and that the initiation of the run is connected in some way with spate conditions. Observations on the effect of silt have shown that the egg rapidly acquires a coating of silt which is evidently fatal but the post-hatching stages can survive exposure to short periods of silting. Prolonged exposure to silt is fatal but this is not likely to occur in the streams in which trout spawn.

Other work carried out at Pitlochry has included laboratory investigations on the effects of electric current on trout and other freshwater fish and a preliminary survey of the helminth parasites of trout. Some work has also been done on the relationships between zooplankton and the bottom fauna. The results of the latter suggest that zooplankton does not play a very large part as an element in the diet of the bottom fauna. These latter investigations have also provided interesting information on the extent and rapidity of fungal attack on dead zooplankton organisms.

Spain

(J. CUESTA).

Biology.

A systematic study has been carried out of the scales of salmon taken in the rivers in the province of Santander.

Statistics.

The catches of salmon in the rivers of this region during the year were as follows:—

Ason river 220 salmon weighing 1,229 kg.
Pas river A protected river and fishing was not authorized.
Nansa river 170 salmon weighing 972 kg.
Deva river 293 } weighing together 4,969 kg.
Cares river 627 }

Artificial Propagation.

Hatcheries of the "Servicio Nacional de Pesca Fluvial", had the following output.

Hatchery of Infiesto (Asturias):—

Period	Trout eggs	Salmon eggs
1951—52	153,500	425,000
1952—53	152,000	440,000

Hatcheries of Guipuzcoa and Navarra:—

Period	Trout eggs	Salmon eggs
1951—52	318,000	36,000

The fry were distributed in the north and north-west rivers of the peninsula.

Sweden

(JÖRAN HULT).

Work has been continued along lines of previous years and it has been carried out by the Migratory Fish Committee in cooperation with the Board of Fisheries and Fishery Research. Several reports on different problems have been put before the Committee, but the reports are available only in Swedish. It is to be hoped, however, that some of them will be published in the "*Annual Report*" from the Institute of Freshwater Research, Drottningholm, as they are of interest in salmon research.

During 1952 a new and well-equipped laboratory has been erected at the Holle Hydro-electric Power-house at the river Indalsälven. Here there are good possibilities of studying problems relating to the hatching of salmon eggs and rearing of smolts. As all the spawning areas of the more important Swedish

salmon rivers are or will be destroyed by hydro-electric power schemes, the Swedish salmon stock in the Baltic has to be maintained by smolts reared in ponds and they can be put out near the mouths of the different rivers. Much work still has to be done to put this smolt rearing on an economical basis. Among other things it is proposed to get a longer growing season by using the warm cooling-water from the generators of the powerhouse during early spring and autumn. It is hoped that in this way smolts can be reared in two years compared with the usual three years now.

The salmon tagging has continued and about 29,000 smolts were tagged during 1952. Some of the earlier taggings have now given returns and the results are very promising. Salmon 159 small (clean salmon, smaller than 50 cm.) and 186 kelts caught in the sea in the Norrbotten archipelago have been tagged. Ascending salmon, transported past powerhouses, 292 in number and salmon used for artificial propagation (952 in number) have also been tagged.

The collection and study of salmon scales both from the rivers and the sea have been continued.

Co-operation in salmon research has resulted in a joint tagging programme for the Bothnian Gulf in which both Finland and Sweden will take part.

Shellfish Committee.

1952

By B. HAVINGA

CRUSTACEA

Belgium

(E. LELOUP).

Biological and Technical Study of the Shrimp (*Crangon vulgaris*).

The biological study of the shrimp was continued. Its aim is to ascertain the annual changes in the stock of shrimps on the Belgian coast.

The following data were obtained:—

- the quantity of shrimps caught;
- the quantities in the catches of commercial and non-commercial shrimp;
- the length distribution of a 1 kg.-sample of shrimp as caught;
- the length distribution of a 1 kg.-sample of commercial shrimp;
- the number of shrimps with or without eggs were recorded;
- analysis of the stomach contents of certain species of fish caught with the shrimp trawl.

England

(H. A. COLE).

Shrimp and Prawn Investigations.

Work was continued at Burnham on the pink shrimp fishery of the Essex and Kent coasts. Detailed examination of samples collected at monthly intervals during 1951 has provided proof of sex-change in *Pandalus montagui*.

Examination of stomach samples throughout the year confirms the importance of the tube worms *Sabellaria alveolata* and *S. spinulosa* as food, and it is probable that the distribution and availability of these worms affects the movements of pink shrimps.

A detailed comparison throughout the year of the performance of push-nets of different types, as used for the collection of brown shrimps, *Crangon vulgaris*, has demonstrated that the use of a mesh of about 24 to 26 mm. rather than one of smaller dimensions, results in an improvement of the catch, in consequence of a better filtration. These experiments con-

firm the results of recent Belgian trials with trawls of different meshes.

During the winter of 1951–52 a survey was made of the types of pots in use along the south-west coast of England for the capture of *Leander serratus*. Pots of seven distinct types were collected and were used in two mixed fleets. It was found that the small-eyed pots are greatly superior in catching power to the large-eyed type. They are also easier to bait and empty and more convenient to stow. These trials are being extended in the coming season.

Finland

(S. SEGERSTRÅLE).

An investigation on *Leander adspersus fabricii* in Finnish waters has been finished, a summary will probably be published.

France

(P. DESBROSSES).

A la suite des mesures préconisées par l'Office Scientifique et Technique des Pêches Maritimes pour la protection du stock des homards et des langoustes des côtes de France, le Gouvernement Français a pris un arrêté portant la taille marchande de ces crustacés de 20 à 23 cm.

Publications.

XIVème Congrès National des Pêches et Industries Maritimes. Boulogne s/Mer, 1952.

DESBROSSES: Résumé de nos connaissances sur la Crevette grise.

LE GALL: La croissance de Homard. Protection nécessaire du stock. "La Pêche Maritime", 15 Mars 1952.

Bulletins d'Information et de Documentation (brochures de vulgarisation de l'Office Scientifique et Technique des Pêches Maritimes).

LE GALL: Notes complémentaires sur la biologie du Homard: La protection nécessaire du stock.

— Conservation et transport des Crustacés vivants.

PERCIER: Biologie et pêche de la Crevette profonde *Pandalus borealis* KRÖYER.

Germany

(R. KÄNDLER).

Detailed investigations were made into the biological and hydrographic conditions of the shrimp fishery on the west coast of Schleswig-Holstein. A close study was made of such physiological characteristics that are of importance for the commercial utilization of the North Sea shrimp (*Crangon vulgaris*), i. e., propagation, growth, moulting, migrations; the influence of tides, currents, wind and water temperatures upon the catches and their yearly fluctuations were also examined.

Netherlands

(B. HAVINGA).

Shrimps. Statistical investigations on the catch of shrimps (*Crangon vulgaris*) per unit effort, which commenced in 1946, were continued. A beginning was made with the working up of these statistics and with the composition of a general survey on the stock of shrimps.

Lobsters. The stock of lobsters on the foot of the dikes in the Easter Scheldt is increasing again after a very low minimum which presumably has been caused by overfishing. Data on the daily catch of lobsters in a limited area have been examined for a series of years.

Scotland

(H. J. THOMAS).

Gear. A further test of the relative efficiency of the Scottish type creel and the Cornish pot has been made.

Survey of Lobster and Crab Fishery. The survey work reported in the 1951 Administrative Report is being continued and the preliminary results of increasing the minimum legal size limit for lobsters and crabs have been assessed.

Lobster Tagging. Nine hundred tagged lobsters have been released on the west coast of Scotland. In marked contrast with previous tagging results from the south-east of Scotland, returns from the west coast have shown only a moderate fishing mortality. The results for both areas are in keeping with the observed length distributions. As on the east coast, no obvious migratory tendency has been observed.

Physiology. Experiments have been carried out in order to determine the relationship between oxygen uptake of lobsters and size, sex, temperature, oxygen concentration and carbon dioxide tension.

Parasites. The parasitic copepod *Nicothoë astaci* was found to be of frequent occurrence on the gills of lobsters in samples examined both on the west-coast grounds and from Orkney waters.

MOLLUSCA

Belgium.

(E. LELOUP).

Infection of *Mytilus edulis* by *Mytilicola intestinalis* STEUER.

Following the decision taken in Paris in 1951, the investigations were continued on the mussels living on the Belgian coast from Knocke to La Panne. These observations were carried out during the months of April, June, September and December.

England (H. A. COLE).

Oyster Research.

(a) **Burnham-on-Crouch.** Work was continued on the factors controlling the settlement of spat in the rivers Crouch and Roach. The spatfall was again light and it is believed that this was the result of the low level of nanoplankton organisms, combined with fluctuating and rather low water temperatures. It appears that the minimum level of flagellate population required for the satisfactory growth and survival of oyster larvae lies probably at about 5 per mm.³ of 2—10 μ organisms.

Settlement of the alien barnacle *Elminius* now appears to have reached a stable level in the Essex rivers. Experiments on control of this competitor by D.D.T. were continued, but with unsatisfactory results.

Work on the control of *Urosalpinx cinerea*, the American oyster drill, was resumed and a special dredge, developed in 1951, has been successfully used. This dredge retains drills but does not collect oysters or large oyster shells.

(b) **Conway.** Experiments in the breeding of oysters in tanks were continued, but the crop of spat was light, following a very heavy settlement of *Ascidella* in the tanks during the early part of the season.

Attention was given to the development of a standard method of rearing oyster larvae in one litre beakers. Full growth of larvae and settlement of spat was obtained using a variety of organisms belonging to *Chrysophyceae*, *Chlorophyceae* and, to a lesser extent, *Cryptophyceae*. No growth has been obtained by feeding blue-green algae (*Cyanophyceae*) or bacteria.

Shell Disease.

Work on shell disease in native and relaid French oysters has been continued at Conway and Burnham. The disease is still extending in both distribution and intensity of attack, particularly in the shallow creeks in Essex. Up to 60% infestation has been found among native oysters. Experience with Dutch methods of control involving dipping in mercuric chloride solution and removal of cultch has so far been disappointing.

Polydora.

Trials have been made with solutions of mercuric chloride, D.N.O.C. and formalin and also with fresh water for the control of *Polydora* in Cornish waters. All methods tested proved to be ineffective in freeing oysters from the pests or in preventing reinfection. Mercuric chloride appears to cause a loss of condition.

Mussel Research.

Work on the mussel parasite *Mytilicola intestinalis* was continued. It appears that the critical water temperature for the breeding of *Mytilicola* is about

5° C. On the east coast of England breeding is interrupted for about 2 months during February and March, but on the south and west coast it normally continues all the year round.

The distribution of the parasite in Britain is clearly linked with the movements of shipping, particularly of naval vessels moved for reconditioning and vessels of all kinds consigned to ship-breaking yards. Substantial mortalities of infested mussels have been observed at Whitstable, in the river Medway, in the Tamar and in the Helford river. The survivors still show a heavy infestation with *Mytilicola*.

Several alternative hosts of the parasite have been discovered in laboratory experiments, but samples of oysters from the Yealm and Helford rivers, where mussels are heavily infested, have proved to be free of parasites. It is suggested that a special set of conditions of comparatively rare occurrence is necessary before oysters become infected.

Escallops.

The survey of the English Channel scallop beds was continued with particular reference to the area between the Isle of Wight and Plymouth. New devices are being developed for the collection of escallops.

Cockle Investigations.

A technique has been developed for the survey of cockle beds and has been applied in a number of localities. It appears that in Liverpool and Morecambe Bays and along the North Wales coast, cockle stocks are very low as the result of repeated failures in spatfall and high intensity of fishing.

Shellfish Purification.

Attention has been given to the simplification of the mussel and oyster cleansing techniques in use at Conway and Brightlingsea respectively, with a view to reducing the capital cost of such plants and increasing their output. These experiments are not yet complete but it is clear that oysters can be purified in simple pits without chlorination of the water in areas where contamination is slight. The initial sterilization of the water with chlorine is not essential for the purification of mussels since this results from the rapid passage through the mussel of water which is freed from contaminating organisms during the process. Successful experiments have been made with an increased quantity of mussels per unit of tank space, and in this connexion aeration of the water has a valuable effect. These experiments are being continued and will be fully reported next year.

France

(P. DESBROSSES).

Ostréiculture.

La reproduction de l'huître plate (*Ostrea edulis* L.) et de l'huître portugaise (*Gryphaea angulata* LMK.) a été suivie minutieusement de Mai à Septembre,

dans les régions d'Auray, La Tremblade, Arcachon. Dans le bassin d'Arcachon, où l'on rencontre les deux espèces, la reproduction a été mauvaise pour l'huître plate, excellente pour l'huître portugaise: les émissions de *Gryphaea* se sont manifestées du 20 Juin au 20 Juillet; du 30 Juillet au 10 Août et après le 20 Août, on a constaté un arrêt d'émission des larves, coïncidant avec une diminution de la température de l'eau au-dessous de 22° C. (elle était de 22 à 25° C. en Juillet) et de la température de l'air, qui s'est abaissée jusqu'à 11° C. en Août. Le naissain qui se fixe sur les tuiles 11 jours après l'émission a subi une importante mortalité en Août, pour la même raison.

Les essais de collecteurs de naissain d'huîtres et d'épandage d'engrais sur les claires expérimentales ont été poursuivis en 1952. Les engrais sont mis sous forme de superphosphates, dans la proportion de 150 kg. à l'hectare répartis sur 6 mois de l'année: de Mai à Octobre.

Mytiliculture.

La répartition du "cop rouge" *Mytilicola intestinalis* STEUER dans des moules prélevées sur les gisements naturels et sur les parcs depuis la frontière belge jusqu'à la Seine indiquait d'Octobre 1951 à Mars 1952 une contamination faible dans le Boulonnais, avec prédominance de femelles, forte en Normandie, avec prédominance de mâles.

Autres Lamellibranches.

L'étude du stock et de la croissance des coquilles St.-Jacques (*Pecten maximus* L.) a été poursuivie en rade de Brest en Janvier, Avril, Mai, Juin, Juillet, Novembre 1952.

Des marquages de cette espèce sont effectués régulièrement; une dizaine de marques ont été rapportées par les pêcheurs.

Un millier de pétoncles, *Chlamys varia* (L.) ont été marqués suivant la même technique en 1952 dans la région de La Rochelle; 80 reprises ont été effectuées en un seul mois.

Une étude a été entreprise sur le vanneau *Chlamys opercularis* (L.) dans la région du Boulonnais.

Le laboratoire de La Rochelle continue les essais de protection des bois contre les tarets (*Teredo* sp.).

Publications.

XIVème Congrès National des Pêches et Industries Maritimes. Boulogne s/Mer, 1952.

BRIENNE: Résumé de nos connaissances sur la Coque.

— Etat du stock des moules du Boulonnais.

FAURE: La pêche de la Coquille St. Jacques en rade de Brest.

LADOUCE: Résultats des recherches pratiques depuis 1950 en ostréiculture: récolte du naissain, utilisation des engrais.

LE DANTEC: Note sur les gisements coquilliers de la rive gauche de la Gironde.

MARTEIL: Une huître reconstituée: le gisement de Locqueltas en rivière d'Auray.

TROCHON: Observations sur la répartition en profondeur des larves de *Gryphaea angulata*.

Bulletins d'Information et de Documentation. (Brochures de vulgarisation de l'Office Scientifique et Technique des Pêches Maritimes).

LE GALL: La Coquille St. Jacques en rade de Brest.

Germany

(P. F. MEYER-WAARDEN).

Mussel Investigations.

During 1947—50 the "Institut für Küsten- und Binnenfischerei" has made investigations in the east-Frisian Waddensea on the re-colonization of the mussel banks after the severe winter 1946/47 and has reached important conclusions regarding the commercial yield of the mussel stocks in the German Waddensea.

During the years 1950—52 the *Mytilicola* epidemic caused the European wholesale mussel trade to take an increasing interest in the non-infested mussel stocks on the western shore of Schleswig-Holstein and the Flensburg fjord. In 1952 the "Institut für Küsten- und Binnenfischerei" gave its assistance to the development of an artificial mussel culture in Schleswig-Holstein. In addition to much local information a detailed examination of the natural mussel stocks in Flensburg fjord was carried out. As the Flensburg mussels are not subjected to a tidal rhythm and as the salinity in this fjord is lower than in the North Sea, the study of these mussels offers many interesting possibilities for comparison with the North Sea mussels. A striking feature, for instance, is the fact that in the fjord even old mussel settlements are not surrounded by silt as is every mussel bank in the Waddensea.

The biological and economical conditions for the development of mussel cultures have been summarized in a detailed paper.

Transplantation of Mussels.

In spring 1951 mussel fry from the Flensburg fjord was transplanted into the Waddensea east of Föhr and in Jade bay. The mussels were placed in perforated metal boxes which were deposited in the Waddensea. Older individuals, if any, were painted white. Last year the mussels were examined for growth and flesh percentage. The experiments will be continued this year.

Mytilicola Investigations.

The investigations into parasitic infestation by *Mytilicola intestinalis* were continued; it appeared that the attack was generally unchanged, at any rate there was as yet no sign of a decrease; neither was there any visible change in the degree of infestation compared with the previous year.

On the mussel banks between Borkum and Norderney 100 % of the stock was infested and each mussel sheltered on average, 3—8 parasites. In Jade

bay 80—90 % of the stock were infested with 8—9 parasites per mussel. In the Cuxhaven area the attack was weaker; generally 3 parasites per mussel were found. The Elbe constitutes, as before, the border line between infested and non-infested stocks.

Netherlands

(P. KORRINGA).

Oysters.

Spatfall predictions based on plankton observations have been carried out throughout the summer season. A further analysis was made of the various factors influencing the intensity of setting on tile collectors and mussel shells. Observations on our experimental oyster plot facilitated this work.

Methods have been developed to prevent the setting of barnacles on tile collectors without interfering with the setting of oyster spat. The problem of fouling organisms on tile collectors was successfully solved by application of chemical eradication, which did not interfere with the oyster's life and growth.

During a short period in July shell disease appeared to spread. The attack was very light, however, and will hardly lead to any appreciable effect on the condition of the oysters in future years. To prevent further outbreaks of shell disease as far as possible, some semi-derelict grounds were carefully cleaned by dredging. It appeared to be difficult to destroy living *Crepidula* and mussels through suffocating them with sand. Both species appeared to be able to free themselves from layers of sand several cm. thick. Analysis of this phenomenon gave, at the same time, a better insight into the difference between summer and winter conditions of oyster grounds.

Mussels.

Much time has been devoted to studying the mussel parasite *Mytilicola intestinalis*. In the course of the summer of 1952 *Mytilicola* advanced slightly, and possibly only temporarily, in a westerly direction in the Waddensea. In the Zealand waters the devel-

opment of new generations of *Mytilicola* was very slow in the first half of the year. Later, especially in September and October 1952, considerable numbers of young parasites were produced. The mussels which they infested in considerable numbers, soon suffered from lack of growth and poor condition. Detailed analyses were made of the relation between *Mytilicola* infestation and growth and quality of the mussels. The highest numbers of *Mytilicola* and the poorest condition of the mussels were found in the very same places where alarming figures were obtained in the years 1950 and 1951.

Efforts to free mussels from their parasites by chemical methods did not lead to success, not even on laboratory scale. *Mytilicola* taken from the mussels did not appear to be sensitive to oligo-dynamic action of Cu, Zn, Ag, or Hg.

Publications.

KORRINGA, P.: Epidemiological observations on the mussel parasite *Mytilicola intestinalis* STEUER, carried out in the Netherlands 1951. Ann. Biol., 8 (1951), pp. 182—185.

— Larvae and spatfall of oysters in the Oosterschelde (Holland) in the year 1951. *ibid.*, pp. 178—180.

— Recent advances in oyster biology. Quart. Rev. Biol. (Baltimore), 27, 3 & 4, pp. 266—308, 338—366.

MACKIN, J. G., KORRINGA, P., and HOPKINS, S. H.: Hexamitiasis of *Ostrea edulis* L. and *Crassostrea virginica* (GMELIN). Bull. Mar. Sci. Gulf and Caribbean, 1, 4, pp. 266—77.

KORRINGA, P.: The shellfish industry in Holland. U. N. Sci. Conf. Conservation, Vol. VII, pp. 47—51. (1952).

Scotland

(H. J. THOMAS).

Mussels.

A further examination of the mussel stock in the Firth of Clyde and in the Firth of Forth has been carried out in an investigation of the spread of *Mytilicola intestinalis*. Although the distribution is still limited, the infected area has been extended.

Hydrographical Committee.

1952

By H. U. SVERDRUP

Belgium

(E. LELOUP).

The following observations were made:—

1. Aboard the "West-Hinder" lightship:—

- (a) a daily water sample (temperature, salinity, alkalinity).

The results were communicated regularly to Lt. Cdr. J. R. LUMBY, Fisheries Laboratory, Lowestoft and from 1. November to Mr. JENS SMED, Hydrographer of the Council, Copenhagen;

- (b) a weekly water sample of one litre (for complete chemical analysis);
- (c) as the "Carruthers Vertical Log Current Meter" was not installed aboard the lightship, no continuous current observations were carried out during 1952.

2. Aboard the Fishery Protection Vessel "Lt. Victor Billet":—

- (a) Stations B 13, 14, 15 and 16 of the line Grave-lines—Deal and Station B 22 off the Belgian coast:—

- (i) once a month (from May till September) a water sample at the surface, as well as at 15, 30 and 45 m. according to the depths (temperature, salinity, alkalinity);
- (ii) once a month (from May till September) a water sample from 15 m. for complete chemical analysis;
- (iii) during the cruises of the fishery protection vessel, water samples were taken:—
cruise Ostend—Dublin (5.—20. May); south coast of Ireland: Fastnet to Mine Head, 6 samples;
cruise Ostend—Iceland (4.—23. June), around the coast of Iceland (14.—15. June), 24 samples (at one hour's interval);
cruise Ostend—Lisbon (15. August—3. September); English Channel: Le Havre to d'Ouessant (17.—18. August), 23 samples (taken at one hour's interval).

3. Aboard the Fishery Research Vessel "Hinders":—

- (a) When the "Hinders" put to sea on experimental fishing, water samples were regularly taken at the surface on different points of the Belgian coast.
- (b) During the two cruises (7.—12. and 23.—26. January) organized for the French—Belgian herring tagging experiments, water samples were taken on the spent-herring grounds.

Denmark

(HELGE THOMSEN).

Cruises. In connexion with biological work temperature and salinity and some phosphate and oxygen observations were made from the "Dana" in the North Sea from 25. April to 28. May, and again on 24.—25. August. Sections R and S were worked by the end of April. At the beginning of June the Faroe-Shetland section was worked, and during the month of June investigations were carried out in Faroe waters, especially north of the islands. In July and the first half of August investigations were carried out in West Greenland waters, and the fixed hydrographical sections were visited. From 14. August a section from Cape Farewell to the English Channel was worked. The ordinary hydrographical investigations were supplemented by bathythermograph records.

The M/C "Adolf Jensen" made hydrographical observations in West Greenland coastal waters throughout the year.

In the waters north of the Faroes hydrographical investigations were carried out by HDMS "Thetis" in March, July, November and December, and by M/C "Jens Væver" in May.

In the Transition Area and the Baltic the "Biologen" carried out hydrographical observations in conjunction with biological work.

Observations from Liners. Surface samples were collected from liners on the routes Lindesnes—Greenland, Lindesnes—Iceland, and Esbjerg—Grimsby/London.

Observations from Lightships and Coastal Stations. Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—

- 1. daily observations of temperature and salinity from 12 lightships and 17 coastal stations;
- 2. 4-hourly estimations of the surface current from 12 lightships;
- 3. approximately twice per month temperature, salinity and oxygen content observations in the Bornholm Deep off Christiansø.

Germany

(G. BÖHNECKE).

German Hydrographic Institute, Hamburg.

Research Cruises. During the period from 26. February to 19. March 1952, a cruise was made by the "Gauss" in the Southern Bight to determine the

temperature, salinity, turbidity, chlorophyll content, intrinsic fluorescence, nitrite and total phosphorus content distributions. This was in connexion with quantitative determinations of the total plankton and the albumen content of plankton (carried out by the "Institut für Meereskunde" of Kiel University), as well as for plaice eggs and larvae (by the "Max Planck-Institut für Meeresbiologie", Wilhelmshaven). In addition the current in the area investigated was measured over 15 days with 10 self-recording paddle-wheel current-meters and the fluctuations with time of the vertical distribution of current and the hydrographic stratification were observed from two anchored stations over 25 hours. Furthermore in order to investigate the distribution and composition of the sediments on the sea bottom and the submarine dunes, bottom samples were collected at short intervals. The main object of the cruise was to obtain a picture of the relations between the distribution, extension and mixing of the water masses on the one hand, and on the other hand of the water masses and biological conditions during the spawning time of plaice.

Another cruise was made to the central and northern North Sea by the "Gauss" from 5. until 15. August 1952. The vertical distribution of temperature, salinity, turbidity, echo scattering layer and some chemical factors along a north/south section were ascertained. Furthermore the fluctuation, with time, of these factors and the distribution of current from the surface to the bottom was observed north of the Dogger Bank during a three days' anchored station. These measurements, in connexion with simultaneous observations of the plankton content by the "Institut für Meereskunde" of Kiel University, are particularly required for the investigation of the discontinuity layer in summer and its relations with the distribution of turbidity and the echo scattering layer.

Lightships.

A. Positions.

The present positions of lightships from which routine observations are taken, are as follows:—

	Lat. N.	Long. E.
"S 2"	54°00'.5,	3 32'.0
"P 8"	54°16'.0,	7°11'.5
"P 12"	54°00'.0,	7°51'.5
"Elbe 1"	54°00'.0,	8°10'.7
"Weser"	53 51'.6,	7 53'.2
"Fehmarnbelt"	54 36'.0,	11 09'.0
"Kiel"	54°29'.9,	10°18'.5
"Flensburg"	54 50'.3,	9 53'.8

B. Programme of observations.

On board "S 2":—

- Current measurements by cross-shaped log (Stromkreuz) every two hours.
- Continuous current measurements by vertical log.
- Daily measurements of surface temperature and salinity at 0800.

- Every three or four days at high and low water surface temperature and salinity measurements on station.
- Every Saturday at 0800 one series (temperature and salinity) at a depth of 5, 10, 15, 20, 25, 30, 35, and 40 m., and at the bottom with the Pettersson sampler.

On board "P 8", "P 12", "Elbe 1", and "Weser" as under (a), (c), (d) at "S 2".

On board "Fehmarnbelt":—

- Current measurements by cross-shaped log (Stromkreuz) every four hours.
- Daily at 0800 one series (temperature and salinity) at 0, 5, 10, 15, 20, 25 m. depth and at the bottom.

On board "Kiel" and "Flensburg":—

- Current measurements by cross-shaped log (Stromkreuz) every four hours.
- Daily at 0800 measurements of surface temperature and salinity.

C. In 1947, the German Hydrographic Institute resumed the oceanographical observations which had last been made in 1945. The observations in 1947 were still irregular. Those taken in 1948 and subsequent years will probably be published early in 1953¹). Measurements of currents and surface temperatures were commenced in 1947/48. Serial observations and observations of salinity were resumed in the spring of 1949. Details, e. g. when, where, and what had been observed were already published in the *Annual Reports* of the German Hydrographic Institute.

D. In addition, the German Hydrographic Institute takes two daily observations, at 0800 and 1600, of the temperature of water in the River Elbe at Hamburg.

England

(J. R. LUMBY).

Fisheries Laboratory, Lowestoft.

In the southern North Sea, surface observations of salinity and temperature were made on five cruises during the period January to March, in connexion with plaice egg studies. In June salinity and temperature observations at various depths were made off the north-east coast of England in connexion with studies of the fat content in plankton and with herring investigations.

On three of the five cruises in January to March, and in June and September, series of observations were made to study the effect of the wind on tidal streams. These data are providing valuable information on the processes affecting the various fields. A close survey of the Beachy Head region was made in June, to study the possible relationship between the temperature discontinuity and the bottom configuration.

¹) In the series *Meereskundliche Beobachtungen und Ergebnisse*.

Routine monthly series of salinity and temperature observations were made on the Flamborough Line.

The section west from Bear Island was worked in March, August, and December. In June, a section Norway—Bear Island and another south-west from Bear Island were worked. In September two sections were worked off southern Greenland. Salinity, temperature, and oxygen observations were made on all sections. Samples down to 2,500 m. were taken for the first time in June.

Temperature observations were made in connexion with fish distribution studies in the Barents Sea in January, March, and June, and off southern Greenland in August and September.

Numerous B/T lowerings and thermograph surveys were made in connexion with this work, and also with studies of plankton and capelin, and with cod-egg and larvae surveys off Lofoten.

The surface sampling organization in the waters round the British Isles was maintained without changes, except that the frequency of salinity sampling at the Weather Ship Stations was reduced from daily to alternate days. The *Synoptic Hydrographic Charts* were produced for each month to June 1952; for later months they were produced by the Service Hydrographique, the work having been taken over on 1. November.

A Carruthers Drift Indicator was used off Bear Island, suspended from a dahn buoy moored in 70 fathoms. It worked satisfactorily, despite bad weather.

Experiments were begun with plastic drift-envelopes, releases having been made between Scotland and Greenland, and in the southern North Sea.

Marine Biological Laboratory, Plymouth.

Monthly measurements at International Hydrographic Station E1 have been maintained for salinity, temperature, inorganic and total phosphate, and silicate. There has been no change from the nutrient-poor conditions found in recent years.

A hypothesis has been developed that the long-term fluctuations in the nutrient resources and biological productivity of the English Channel are due to long-term fluctuations in the vertical circulation of the eastern North Atlantic. Through the co-operation of the National Institute of Oceanography, members of the Plymouth staff were able to make deep-water observations in June and September 1952. These, though supporting the initial hypothesis, have raised further problems which require solution before it can be presented.

Department of Oceanography, Liverpool University.

Surface temperatures and salinities were observed three times per week at each of nine stations in the Irish Sea. The salinities were determined by a potentiometric method.

The spectrophotometric determination of the trace-elements in sea water was actively pursued.

Admiralty (Hydrographic Department).

The continuous current-measuring programme operated aboard lightvessels has been maintained and extended. The ships and the dates on which they started the work are as follows:—

"Varne"	23.11.50	"North Carr" ...	26. 6.52
"Smith's Knoll" .	21. 4.51	"Royal Sovereign"	16. 7.52
"S. 2"	21. 5.51	"St. Goven"	5.10.52
"Galloper"	26. 4.51	"Skulmartin"	23. 1.53
"Dowsing"	29. 5.51		

Plans are in train for further extensions. Information resulting has been distributed to interested authorities as earlier, but towards the end of the year this distribution was taken over by the Service Hydrographique of the International Council.

The Wind Service was maintained throughout the year, but it also has now been transferred to the Service Hydrographique. The Atlas of Wind Conditions over the Seas around Britain referred to in the last report was issued during the year by the German Hydrographic Institute.

National Institute of Oceanography.

A theoretical investigation has been made of wind drift in a channel with tidal streams assuming a uniform upward slope in the direction of the wind. Calculations on this basis give values for the drift current through the Straits of Dover in fair agreement with Dr. CARRUTHERS' observations from lightships. The British General Post Office, in agreement with the French Government, is allowing the Institute to study fluctuations in the current by analysis of measurements of north-south electric potential gradient made with the help of a submarine cable across the Straits of Dover. The lightship measurements will be continued and efforts made to obtain more information about the velocity-depth profile.

A summary of the last few years' work on waves has been published (DARBYSHIRE: Proc. Roy. Soc., **215**, 299, 1952). The Institute is collaborating with the Department of Meteorology, Imperial College, London, and Woods Hole Oceanographic Institution in studying the aerodynamic drag of the wind on the water surface by pilot balloon experiments and other observations. The work will be done in the NE. trade winds, from an off-lying island in the West Indies.

An account of relatively simple and cheap apparatus for auto- and cross-correlation has been published (TUCKER: J. Sci. Instruments **29**, 326, 1952). A wave recorder entirely contained within the ship was used successfully for 6 months. A brief description of the instrument has been published (TUCKER: Nature **170**, 657, 1952).

Theoretical and experimental work designed to improve our knowledge of the interchange of energy between the oceans and the atmosphere is being continued.

Finland

(G. GRANQVIST).

Hydrographic observations from 22 fixed stations, of which 3 are new inshore ones (temperature and salinity), 7 lightships (temperature, salinity, wind and current), 1 liner on the route Helsingfors—Copenhagen or Antwerp (surface temperature and salinity), 13 tidal gauge stations, 13 tidal pole stations, and ice observations too from about 70 ice stations, 5 icebreakers, and the Finnish winter liners. The new research ship M/S "Aranda" is expected to start preliminary work in the Baltic in the course of the summer without a previously fixed programme.

France

(P. DESBROSSES).

Le navire océanographique "Président Théodore Tissier" a travaillé, du 12 Mai au 5 Juillet, en Manche et en Atlantique, dans la zone comprise entre le banc Chaucer, les Açores, le banc Joséphine, Vigo et la côte française du Golfe de Gascogne.

Les observations hydrologiques habituelles ont été effectuées: 773 relevés de températures et prélèvements d'eau au cours de 174 stations; 17 récoltes d'échantillons de fond, 420 lancers de bouteilles dérivantes.

Au cours de la seconde partie de sa campagne, le "Président Théodore Tissier", du 21 Juillet au 5 Octobre, a travaillé en Manche, de Brest à Terre-Neuve, sur le Grand Banc de Terre-Neuve et sur la côte du Labrador.

198 stations hydrologiques, 553 relevés de températures et prélèvements d'eau, 23 récoltes d'échantillons de fond, 350 lancers de bouteilles dérivantes ont été pratiqués. Une carte de pêche provisoire du banc Hamilton à la côte du Labrador a été publiée.

La frégate "Aventure" de la Marine Nationale, a effectué, de Mars à Octobre, 63 stations hydrologiques jusqu'à 500 m. de profondeur sur les bancs de Terre-Neuve, devant la côte ouest du Groënland, dans le Golfe du Saint-Laurent et au voisinage des Açores.

L'avisogarde-pêche "Ailette" de la Marine Nationale a effectué en Avril une section hydrographique de 12 stations entre le Dogger Bank et le Viking Bank, en Mai 4 stations entre le Fisher Bank et Brucey's Garden, en Juillet 8 stations sur le trajet Thorshavn—Trondheim.

La frégate météorologique "Mermoz" stationnée au point "K" (45° L. N. et 16° W. Gr.), y a procédé à 4 stations hydrologiques.

L'escorteur "Voltigeur" de la Marine Nationale, a exécuté en Novembre 1952, 11 stations hydrologiques jusqu'à 400 m. de profondeur, entre Casablanca et Funchal.

Le navire hydrographe "Beautemps-Beaupré" a prêté son concours au centre océanographique de Pointe-Noire pour l'exécution de quelques stations au large de ce port.

Les sections hydrologiques en Manche ont été poursuivies en collaboration avec les services du Ministère de l'Agriculture et des Pêches de Grande-Bretagne.

Des stations fixes mensuelles ont été effectuées dans les régions de Boulogne, Roscoff et La Rochelle.

De nombreuses stations hydrologiques ont été faites à bord des bateaux de pêche: en Juin, 63 stations en surface et à 50 mètres à bord de 2 thoniers opérant dans le Golfe de Gascogne jusqu'au large de Vigo; en Août et Septembre, à bord de vedettes garde-pêche de la Marine Marchande et de sardiniers sur les lieux de pêche de la sardine.

En Méditerranée, une coupe hydrologique de 14 stations profondes a été pratiquée en Septembre par l'avisog "Élie-Monnier" de la Marine Nationale entre les côtes de France et d'Algérie, le long du 6° E. Gr.

Au large des côtes algériennes, l'escorteur "Cimeterre" de la Marine Nationale, a effectué un certain nombre de profils au cours desquels 187 échantillons d'eau de mer ont été recueillis.

Iceland

(U. STEFÁNSSON).

Some hydrographical observations were made in Faxa Bay and off the south coast of Iceland during the 29. and 30. April in connexion with plankton investigations. From 15. May to 20. May, during cod investigations, a station was taken near Kögur on the north-west coast and the three first stations off Siglufjörður and off Langanes. Bad weather conditions hindered further hydrographical observations.

A hydrographical cruise was made from 7. June to 25. June. Three sections were worked off the west coast and the usual sections were made off the north and the north-east coast. This year the Jan Mayen section was worked north to 69°07' N. During these cruises observations of temperature and salinity were made and some oxygen determinations were made at several stations off the east and north-east coast. Drift-bottles were launched at ten stations between Iceland and Jan Mayen and east of Langanes.

Sea surface temperature measurements were continued in the same fashion as the previous year.

Ireland

(A. E. J. WENT).

Daily surface temperatures were recorded at the "Conigsbeg" lightship.

Netherlands

(P. GROEN).

Koninklijk Nederlands Meteorologisch Instituut, De Bilt.

Surface temperature measurements and collection of water samples once a week from liners on the

routes Hoek van Holland—London and, from 1. November, IJmuiden—Hull.

Three-hourly surface temperature measurements and continuous current measurements from the light-vessels "Goeree", "Texel", and "Terschellingerbank".

Various hydrographic observations in the southern North Sea.

Hydrographic deep sea observations on board OWS "Cumulus" at Weather Station "J" during the periods 10.—31. May and 23. Aug.—13. Sept.

Surface temperature and salinity measurements from Weather Ships on their routes to and from Weather Stations "J" and, occasionally, "A".

Rijksinstituut voor Visserijonderzoek, Amsterdam.

Daily salinity measurements from the lightships "Goeree", "Texel" and "Terschellingerbank".

Hydrographic investigations on fishery research cruises in the southern North Sea.

Zoölogisch Station, Den Helder.

Hydrographic investigations in the Waddensea area.

Norway

(J. EGGVIN).

Directorate of Fisheries. Institute of Marine Research.

Cruises. During 1952 14 cruises were undertaken by "G. O. Sars", "Johan Hjort", "Krill" and 3 chartered vessels.

Hydrographic investigations were carried out in Norwegian coastal waters each month of the year; in the Barents Sea in November; in the Norwegian Sea in January, February, May—August, October—December; off West Greenland in July—September; in the north-eastern part of the North Sea in January and February; in the Skagerak in June.

Fixed Oceanographic Stations. Routine observations of salinity and temperature from surface to bottom were continued during the year at the oceanographic stations Lista, Utsira I and II, Sognesjøen, Lusterfjorden, Ona, Eggum and Skrova.

Sea Surface Thermograph Service. Thermograph records were obtained from 8 liners running the following routes from Bergen:—(a) to Newcastle, (b) to Antwerp, (c) to New York, (d) to Kirkenes (East Finnmark), (e) to Oslo.

Salinity samples were collected in fixed positions on these routes. Thermograph records were also obtained from a collier running between Advent Bay, Svalbard, Lat. N. 78°15', Long. E. 16°04', and different ports in Norway during the summer and from a liner running between Southampton and the Canary Islands during the winter.

Flødevigen Sea-Fish Hatchery, Arendal.

With the help of "G. M. Dannevig", hydrographic investigations were carried out in the fjords of southern Norway in January, April, June, September and November; in the Skagerak in January, April, May, August, November and December.

The Geophysical Institute of the University of Bergen.

The M/S "Armauer Hansen" carried out regular investigations along the Sognefjord section (from Bergen about 280 nautical miles towards the north-west) in May, June, July and August, and in the fjords of western Norway in February, April, June, July, August, October and December.

The "Armauer Hansen" also carried out a number of field experiments on turbulence and on currents near the bottom of the sea.

Weather Ship Station "M".

The regular oceanographic investigations at Weather Ship Station "M" (Lat. N. 66°, Long. E. 2°) were continued on board "Polarfront I" and on board "Polarfront II". These investigations include six stations per week, of which one station to 150 m., four stations to 1000 m. and one station to about 2500 m. depth.

In addition sea surface thermograph records at the same station and between this station and Bergen have been continued.

Sea surface samples have been collected in fixed positions between station "M" and Bergen.

Portugal

(A. M. RAMALHO).

No hydrographical observations were made in connexion with the Hydrographical Committee during 1952.

Scotland

(JOHN B. TAIT).

Primary hydrographic work of temperature and salinity observations is now prosecuted almost continuously from all four Scottish research vessels, from the smallest motor vessel working in inshore waters to the larger trawler-type research vessels covering the northern North Sea, the west Scottish coast and nearer Atlantic waters, the Faroe-Shetland Channel and north-west thereof to Iceland.

During 1952 over 2,000 stations were occupied, resulting in almost 10,000 combined temperature-salinity observations and an additional 1,000 approximately, of temperature data alone. Oxygen determinations numbered over 1,600, free phosphate estimations over 3,400, and total phosphate almost 1,300. Including those set out from weatherships, surface drift-bottle liberations numbered approximately 1,700. About 200 plastic drift-envelopes were also set adrift in conjunction with certain drift-bottle liberations.

Spain.**Instituto Hidrografico de la Marina (F. BALÉN).**

Observations for reduction of soundings were carried out in the following areas:—Isle of Alborán (Mediterranean Sea), Sidi-Messaoud (Moroccan coast), Güera, Cape Bojador and River Oro (west coast of Africa), Gran Canaria and Tenerife (Canary Islands).

Observations for obtaining harmonic constants were undertaken near the Isle of Alborán.

Current measurements were carried out at the following points:—

35°54' N., 03°05' W. (Isle of Alborán),

23°50' N., 15°58' W. and 27°54' N., 15°50' W., (River Oro),

27°44' N., 15°40' W. (Gran Canaria).

In collaboration with the "Instituto de Oceanografía" the following work was carried out on the west coast of Africa (from Cape Barbas to Güera):—

Acoustical and mechanical soundings for determination of the 20, 30, 50, 100, 200, 300, 400, 500, and 600 m. isobaths.

Taking of bottom samples by means of the "Leger"-grab.

Collection of water samples and determination of temperature in various depths.

Instituto Español de Oceanografía

(R. GARCÍA-RODRÍGUEZ).

Oceanographical cruises with "Xauen" were undertaken in March—April (Alborán Sea and Mediterranean waters of Spanish Morocco) and in July—August and September (NW. of the Peninsula and in the Cantabrian Sea). In these cruises the physical and chemical features of the sea water and of the marine sediments were studied.

In December an oceanographical cruise was undertaken with the surveying ship "Tofiño" in the waters off Spanish Sahara, between Cape Barbas and Cape Blanco, in order to outline a fishery chart of this region.

In the coastal laboratories in San Sebastián, Santander, Vigo, Málaga, Barcelona and Palma de Mallorca weekly determinations of physical and chemical features at stations near the coast were carried out.

In the coastal laboratories in Vigo and Palma de Mallorca studies on metallic corrosion by sea water were undertaken.

Throughout the year mareographs were in function at Pasajes, Santander, Gijón, Coruna, Vigo, Cádiz, Tarifa, Algeciras, Málaga, Ceuta, Las Palmas (Gran Canaria), Santa Cruz de la Palma and Arrecife. For each mareograph monthly averages were computed. The observations were used for determination of monthly and yearly mean levels and for studies on tides in general.

Sweden

(F. F. KOCZY).

The two permanent sections P and M were covered in January, February, March, July, September, October and December.

Regular observations of temperature, salinity and currents were carried out at Bornö Station and at 10 Swedish lightships.

The hydrographical investigations of the fjords of the Swedish west coast were continued. The section was covered in February, May, July, October and December. At a permanent station twice every day, the temperature, salinity and current were measured at two depths from May until December.

The deep basins of the Baltic were investigated in March and August.

During July optical measurements of suspended particles and of yellow substance were carried out in the Kattegat and the Sound as also in the mouth of Göta river.

During May the Bureau of Water Pollution Investigation made a survey of the state of pollution between Copenhagen and Malmö.

Plankton Committee.

1952

By TRYGVE BRAARUD

Belgium

(E. LELOUP).

The following observations have been made:—

1. Aboard the lightship "West-Hinder":—
 - (a) a weekly plankton sample (taken at the surface—filtering of 100 l. water—net silk No. 25) for phytoplankton.
 - (b) a weekly plankton sample (taken vertically—from the bottom to the surface—net silk No. 3) for zooplankton.

2. Aboard the fishery protection vessel "Lt. Victor Billet":—

Stations B 13, 14, 15, and 16 of the Line Gravelines—Deal and Station B 22 off the Belgian coast:—

Once a month (from May till September) a plankton sample (taken vertically—from the bottom to the surface—net silk No. 3) for zooplankton.

Denmark

(JUL. GRØNTVED).

1. An investigation has been started for measuring the production of organic matter in the Store Bælt, where "Halskov Rev" L. V. is used as a station for the experimental work. At certain intervals the amount of the matter produced by the phytoplankton is determined by means of radio-active Carbon (C^{14}).

2. Investigations on the food of the herring in the waters round Bornholm, which have been carried out for many years, have been continued.

3. A report has been published on the phytoplankton in the southern North Sea in May 1947.

4. Regarding the publication of the phytoplankton collected in the North Sea in May 1948, see the Norwegian report.

5. Phytoplankton samples collected by "Dana" in the southern North Sea in May 1952 have been worked up.

6. An investigation on the quantitative distribution of larger zooplankton organisms in different parts of the North Atlantic has been finished and a manuscript has been completed. The plankton samples for this investigation were collected on the "Dana"-cruises of 1947, 1948 and 1950.

7. The research ships "Dana" and "Jens Væver" collected material for an investigation on the food of the herring in North Atlantic waters in 1951 and 1952. The working up of this material has been started.

8. The phytoplankton in the waters west of Greenland has been studied from samples collected by

"Dana" and "Jens Væver" (1950 and 1952) and by the Norwegian ship "Uran" (1948).

9. Prof. M. J. DUNBAR, McGill University, Montreal, as a visiting worker, has been engaged in a study of the Amphipod fauna of Ungava Bay (Eastern Arctic of Canada), based on the material of the "Calanus" expeditions of 1947—50.

Publications.

GRØNTVED, JUL.: Investigations on the phytoplankton in the southern North Sea in May 1947. — Medd. Komm. Danm. Fiskeri- og Havunders., Ser. Plankton. Vol. V, No. 5. 1952. København.

England.

Plymouth (F. S. RUSSELL).

Observations on phytoplankton throughout the year have been made by Dr. W. R. G. ATKINS and Miss P. G. JENKINS by allowing the plants to multiply in diffuse light in water samples to which nutrient salts had been added. Spectrographic measurements of chlorophyll were also made on the original samples. The water column (0—70 m.) at E1 had a maximum of 1.32 g./m.² in April and a minimum of 0.15 in June.

Dr. H. W. HARVEY has continued his investigations on uptake by *Nitzschia* of inorganic nitrogen and organic phosphorus in the dark by cells deficient in these substances. The behaviour of *Chlamydomonas* towards different concentrations of a number of substances, such as ammonium and manganese, is being used as a possible indication of nutritional requirements.

Cultures of many unicellular plants are being maintained by Dr. M. PARKE and Miss D. BALLANTINE. A comparison of methods of estimating the numbers of nanoplankton organisms in sea water has been made by Miss D. BALLANTINE.

Dr. D. P. WILSON and Mr. F. A. J. ARMSTRONG have made further experiments to test the biological differences between natural sea waters. They found that *Echinus* larvae developed better in water from the Clyde Sea area than from the English Channel. The former water was characterized by *Sagitta elegans* and the latter by *S. setosa*.

Half-hour oblique hauls with the 2-m. stramin ring-trawl, examined by Mr. P. G. CORBIN, showed that in 1952 there was no change from the prevailing low level of macroplankton production off Plymouth.

Lowestoft (R. S. WIMPENNY).

The routine stations of the Flamborough Line were carried out between April and September.

France.

Office des Pêches, Paris (J. FLEURY).

Etude comparative des captures de plancton obtenues avec divers filets pélagiques à bord du navire océanographique "Président Théodore Tissier".

Elevage de flagellés destinés à l'alimentation des larves d'huîtres.

Le "Service Plancton" poursuit les triages et le classement du phytoplancton et du zooplancton provenant de pêches faites:—

— au cours des croisières du "Président Théodore Tissier";

— à bord des frégates météorologiques françaises stationnées au point K;

— par les laboratoires côtiers de l'Office des Pêches en vue de l'étude de l'ostréiculture et des conditions biologiques des lieux de pêche de la sardine, du thon et de divers poissons comestibles.

Une partie du matériel recueilli et trié a été remis aux spécialistes et à diverses Facultés.

Une étude des diverses formes planctoniques capturées au large des côtes du Portugal a révélé lieux de captures du germon, la présence "d'espèces indicatrices" d'eaux chaudes dont la distribution s'étend jusqu'au nord de l'Ecosse.

L'examen de contenus stomacaux de sardines prélevées dans le Golfe de Gascogne montre que les variations saisonnières dans le régime de la sardine sont en relation avec l'apparition des formes planctoniques à des époques déterminées de l'année.

L'étude des œufs; la morphologie et l'anatomie des larves de poissons, en particulier *Katsuwonus pelamis* (L.), *Euthynnus alletteratus* (RAFIN.) et *Coryphæna hippurus* (L.) a porté sur du matériel capturé par le "Président Théodore Tissier" en Atlantique.

L'étude de l'opacification des œufs de poissons après fixation a fourni d'intéressantes conclusions.

Station Maritime de l'Université d'Alger
(F. BERNARD).

L'activité de la Station s'est encore accrue en 1952, et a porté sur diverses propriétés biologiques de phytoplancton et du zooplancton.

En plus des sorties du bateau de la Station, le chalutier scientifique "Professeur Lacaze-Duthiers" et les escorteurs "Cimeterre" et "Pique" de la Marine Nationale française ont contribué aux travaux. Plus de mille échantillons d'eau et d'animaux furent prélevés ainsi. En outre, de nombreuses captures au filet fin concernent les Radiolaires Spumellaires et Collides, dont le professeur HOLLANDE reconstitue les cycles.

Les régions étudiées sont: la côte d'Algérie entre Oran et Alger, jusqu'à 25 milles du littoral, et quelques stations entre Banyuls et Oran, à Toulon et dans la mer Tyrrhénienne.

F. BERNARD a poursuivi l'étude quantitative du phytoplancton des phosphates, des nitrates et des salinités, en relation avec les vents et les particularités

du climat. Un mémoire sur le courant atlantique en Algérie est paru, et un second est en préparation.

Mme LECAL-SCHLAUDER a examiné les Flagellés calcaires et les Diatomées des mêmes eaux. Elle précise, dans ses publications, le rôle de ces êtres comme indicateurs de courants.

Mme F. BERNARD, Melles ROLLIN et LAFABRIE, M. CACHON, déterminent les principaux groupes de zooplancton, et envisagent aussi l'action des facteurs météorologiques sur leur distribution.

M. HOLLANDE a trouvé un nouveau Périidien:— *Ichthyodinium Chabelardi*, commun près d'Alger, qui parasite les œufs de sardines et en détruit une proportion importante.

Publications.

HOLLANDE, A. & CACHON, J.: Un parasite des œufs de Sardine, l'*Ichthyodinium chabelardi* nov. gen., nov. sp. (Périidien parasite) (note préliminaire). C. R. Acad. Sci., **230**, pp. 976—977.

— & — Un parasite des œufs de Sardine: *Ichthyodinium chabelardi*. 5 dessins texte, 1 planche double, Revue des Pêches de Castiglione, sous presse.

— & ENJUMET, M.: Contribution à l'étude biologique des Sphaerocollides (Radiolaires Collodaires et Radiolaires Polycyrtaires et de leurs parasites). Annales des Sciences Naturelles, 100 p., 8 planches doubles, 56 fig. texte.

— Compléments à l'étude cytologique des Radiolaires. Traité de Zoologie P. P. Grassé, tome II.

— Les Périidiens parasites des Phaeodariés. Critique des données relatives à la sporogénèse chez ces Radiolaires. C. R. Acad. Sci., sous presse.

ROSE, M. & CACHON, J.: Le mouvement chez *Diplomorpha paradoxa* ROSE et CACHON, parasite des Siphonophores. C. R. Acad. Sci., **234**, pp. 669—671.

— & — L'émission des bras chez *Diplomorpha paradoxa* ROSE et CACHON, Protiste parasite des Siphonophores. C. R. Acad. Sci., **234**, pp. 2306—2308.

BERNARD, F.: Eaux atlantiques et méditerranéennes, au large de l'Algérie. I. — Hydrographie, sels nutritifs et phytoplancton en 1950. Ann. Inst. Océano., XXVII, fasc. 1, pp. 1—48.

LECAL-SCHLAUDER, J.: Sur un Protiste pélagique rattachable aux Discoastéridés. Arch. Zoo. Exp. et Génér. **89**, 2, pp. 51—55.

— Répartition en profondeur des Coccolithophorides en quelques Stations méditerranéennes occidentales. Bull. Inst. Océanogr. 1018, pp. 1—16.

— Variabilité de la teneur en Coccolithophorides de différentes stations de la baie d'Alger en mars 1952. Bull. Soc. d'H.N. d'Afrique du Nord **43**, pp. 69—80.

— Influence de l'éloignement des côtes sur la végétation des Flagellés calcaires. Bull. Soc. d'H.N. d'Afrique du Nord **43**, pp. 81—85.

Sous presse:—

— Rôle des Flagellés calcaires dans la sédimentation actuelle en Méditerranée par F. BERNARD et J. LECAL-SCHLAUDER. XIX. Congrès International de Géologie, Sect. 4.

— Richesse en microplancton estival des eaux méditerranéennes comprises entre Port-Vendres et Oran. Vie et Milieu.

— Rapport entre Phytoplancton et eaux de débordement de l'Oued Chélif. Soc. d'H.N. d'Afrique du Nord.

Germany.

Biologische Anstalt Helgoland (H. J. AURICH).

The investigations started in 1949 on the influence of the climatic changes upon the distribution and occurrence of plankton and fish fry (especially the summer spawning species, i. e., sardine, anchovy, sole, horse mackerel, mackerel) have been continued. Quantitative vertical hauls were made with the Hensen egg-net from 1. to 28. July on 64 stations in the area between 55° N., 4°30' E. and the German coast. Complementary investigations, by hauls with the egg-net and the Petersen young-fish-trawl, were made on various cruises in the eastern part of the German Bight from March to November (1).

Institut für Meereskunde, Kiel (J. KREY).

1. A method was developed, by means of microscopic and chemical analyses, to determine the amount of detritus in relation to the total amount of microplankton (2).

2. On a cruise with the "Gauss" in the southern North Sea in February/March 1952 this method was used for the first time on a large scale and was employed together with biological observations for characterizing the water masses.

3. On a cruise with the "Gauss" in the area from the Fladen Ground to the Dogger Bank in August 1952, the distribution of detritus according to depth, was studied by the above-mentioned method.

4. A serial method to determine organic carbon suspended and dissolved in sea water was developed and the vertical distribution of both components in the Kiel Bay was investigated according to this method (3).

5. Throughout the whole year every 2—3 weeks plankton samples were taken with nets at 3 stations in Kiel Fjord.

Max-Planck-Institut für Meeresbiologie, Wilhelmshaven; Fishery-biological department (A. BÜCKMANN).

1. The distribution and density of the indicator species and other characteristic forms of the invertebrate macroplankton was studied during a cruise of the "Gauss" off the coast of Holland in February/March 1952; the data were used for determining the various water masses.

2. Routine work on the occurrence of macroplanktonic forms in the coastal plankton of the Jade was carried out every month during the whole year using the Hensen egg-net and a small model of the Petersen young-fish trawl.

3. The spring outburst of phytoplankton in a closed seawater biotope (the former naval harbour of Wilhelmshaven) was followed by daily serial samples and analysed in connexion with certain series of hydrographical observations.

4. Occasional observations on the distribution of zooplankton in experimentally stratified waters have been published (4).

Publications.

1. AURICH, H. J.: Die Veränderung in den Laichverhältnissen bei Sardelle und Sardine unter dem Einfluss der Klimaänderung. Helgoländ. Wiss. Meeresuntersuchungen, Vol. 4, 3 (im Druck).
2. KREY, J.: Die Untersuchung des Eiweissgehaltes in kleinen Planktonproben. Kieler Meeresforsch., Bd. VIII, 2.
3. KAY, H. W.: Eine Methode z. chemischen Bestimmung der organ. Substanz im Meerwasser und ihre Anwendung in der Kieler Bucht. Diss. Kiel, 1952.
4. HARDER, W.: Einige Geräte zur Herstellung von Wasserschichten verschiedener Dichte. Kurze Mitt. aus der fischereibiolog. Abt. d. Max-Planck-Instituts f. Meeresbiologie, Wilhelmshaven, Nr. 1, Juni 1952.
— Über das Verhalten von Zooplankton in geschichtetem Wasser. Ibidem.

Norway

(K. F. WIBORG).

Fisheries Directorate, Bergen.

As in previous years fish eggs and larvae were collected with Clarke-Bumpus plankton samplers in the coast and bank waters of northern Norway in April and May. The cod larvae were more numerous in the Lofoten area than in the spring of 1951. For May, the mean numbers of cod larvae per m.² of sea surface in the years 1947—52 were as follows:—

1947	1948	1949	1950	1951	1952
380	45	1400	15	80	380

The capelin larvae were much more scarce than in 1951, and until the middle of May were not found further south than in the Sørøysund.

At the permanent hydrographical stations at Sognesjøen, Ona, Eggum and Skrova vertical Nansen net hauls were taken regularly all the year. The displacement volumes were little below those of 1951, except at Ona. No salps were observed in 1952. The plankton material taken during 1949—51 has been worked up, and a report is in press.

(K. F. WIBORG).

Plankton sampling has also been continued in some fjords south of Bergen in the period May—September as a link in the investigation of the food and spawning of the sprat. In May—June some fjords north of Bergen were also investigated. A report on the work done in 1950—51 is in press. (K. GUNDERSEN).

Horizontal hauls with the meter net, and vertical hauls with the Nansen net were made during the cruises of the "G. O. Sars" in traverse sections of the coastal banks from Røst to the Andfjord in March—April in searching for the spawning areas of the haddock. Plankton was also sampled on the cruises in the Norwegian Sea and adjacent areas from May to August.

The sampling of zooplankton from the Norwegian Weather Ships was continued during 1952, with vertical Nansen net hauls taken in steps from 2000 m. to the surface at regular intervals throughout the

year. The plankton material from the "G. O. Sars" and from the Weather Ships is continually being worked up. The volumes of the samples are measured, and the composition of the plankton studied. A very large number of length measurements have been carried out on different adult copepods, and the size frequencies have proved to be very useful in distinguishing different populations of the same species.

In the coastal waters from the outer Oslofjord to Stavanger vertical hauls have been made with a meter egg-net from 27. May to 19. June in order to investigate the occurrence of eggs and larvae of the sprat.
(G. DANNEVIG).

University of Oslo (T. BRAARUD).

I. Surveys and Taxonomical Work.

- Quantitative phytoplankton surveys were undertaken from the following areas:—
 - The Norwegian Sea; material collected during the "G. O. Sars" cruise in May—June 1952. (EINAR RAMSFJELL).
 - North of Iceland. Samples from the summer of 1952. (THORUNN THORDARDOTTIR).
 - The poll Hunnebunnen in south-eastern Norway. Monthly samples for 1952—53. (BJØRG FØYN).
- Collections for the study of coccolithophorids were made at Weather Ship "M" in July. (ERLING NORDLI).
- Observations on *Halosphaera viridis* in the Oslofjord were continued. (ERLING NORDLI).
- Taxonomical studies on coccolithophorids and dinoflagellates from the Atlantic were continued. (KAREN RINGDAL GAARDER).
- A study of the morphology of coccoliths by means of electron microscope included two species in culture, *Coccolithus Huxleyi* and *Syracosphaera Carterae*, and species from sea-water samples. (T. BRAARUD, K. RINGDAL GAARDER, J. MARKALI, P. HALDAL and E. NORDLI).
- Zooplankton from the Dramsfjord survey, 1950—51, was worked up. (F. BEYER).

II. Experimental Work.

- Studies of the effect of external factors upon rate of reproduction in species of *Ceratium* were continued. (E. NORDLI).
- The rate of growth at different temperatures was determined in the dinoflagellates *Exuviella baltica*, *Goniaulax polyedra*, *Amphidinium operculatum* and *Prorocentrum* spp. (PÅL BAKKEN).
- The phototactic reaction of dinoflagellates at different light intensities was investigated. (PER HALDAL).
- Bacteria-free cultures of *Prorocentrum micans* were established and a procedure for obtaining such cultures of other dinoflagellates was worked out. (K. and K. BAALSBRUD).

Publications.

- T. BRAARUD and E. NORDLI: Coccoliths of *Coccolithus huxleyi* seen in an electron microscope. *Nature*, **170**, p. 361, 1952.
- T. BRAARUD, K. RINGDAL GAARDER, J. MARKALI, P. HALDAL and E. NORDLI: Coccolithophorids studied in the electron microscope. — Observations on *Coccolithus Huxleyi* and *Syracosphaera Carterae*. *Nytt Magasin for botanikk*, **1**, 1952.

Scotland.

Aberdeen (J. H. FRASER).

Plankton sampling was carried out by the nets used in previous years—International standard fine silk, Hensen egg-net, 1-metre nets towed horizontally and/or obliquely and by 2-metre nets.

The main cruises of the period were:—

1951

October—December North-western North Sea, Fladen, Faroe.

1952

January	East Scottish coastal areas.
February	Moray Firth, Shetland, Faroe.
March	Northern North Sea, Faroe.
April	Northern North Sea, Faroe.
May	Central North Sea, Faroe.
June	West Scottish coast, Faroe.
July	Central North Sea, Faroe.
August	Northern North Sea, Faroe, Iceland.
September	Central North Sea and east Scottish coast.
October	Moray Firth, Fladen.
November	Northern North Sea, Faroe.
December	Faroe.

In addition to the above extensive surveys of the east Scottish herring fishery grounds (Fraserburgh and Peterhead grounds) were carried out from March to August. Thus a wide area of the northern and central North Sea, west Scottish coast and Faroe has been covered.

Five main objectives of the plankton work were given in the corresponding report for 1951, viz. 1, general plankton distribution and production; 2, relationship between plankton and hydrographic conditions; 3, estimation of haddock eggs and larvae at Faroe and in the northern North Sea; 4, estimation of the production of autumn spawned herring in the east Scottish area; 5, relationship between herring and plankton in the Moray Firth in the summer and on Fladen during summer and autumn. These five objectives have been carried on during 1952, and reports on the results are given in Vol. IX of *Annales Biologiques*. Objective '5' above has been carried out in close co-operation with the Oceanographic Laboratory of the Scottish Marine Biological Association at Leith.

Edinburgh (K. M. RAE).

During 1952, the Continuous Plankton Recorder Survey of the waters around the British Isles was continued on the same scale as in 1951. Through the continued generous co-operation of the commercial shipping and Weather Ships of many countries some 39,000 miles of sampling were accomplished. The details are as below:—

	Records	Miles
Hull to Rotterdam.....	11	960
Hull to Hamburg.....	10	2350
Hull to Copenhagen.....	11	3830
London to Stockholm.....	3	630
Leith to Copenhagen.....	14	5220
Leith to Lerwick.....	8	1380
Pentland towards Oslo.....	6	2050
Pentland towards Weather Station "A".....	10	3700
Bergen towards Weather Station "M".....	11	3120
Glasgow towards Weather Station "I".....	14	5620
Glasgow towards Weather Station "J".....	14	5650
Lizard towards Weather Station "J".....	6	2580
Lizard towards Weather Station "K".....	5	2180

General analyses of the plankton taken on all these records has been completed and details are available to any worker who may be interested. Again particular attention has been paid to the distribution of "indicator" species, the phytoplankton, the larvae of benthic forms and the young fish; the results will be published in the *Bulletins of Marine Ecology* in due course.

In the course of the summer herring fishery off Scotland approximately 2000 plankton samples taken with the Hardy Indicator were analysed; approximately half of these were collected by vessels of the Scottish Home Department and half by commercial drifters. Some 5000 herrings were weighed and measured as samples of the catches landed at Fraserburgh and the stomach contents of 50% of these have been analysed for comparison with the plankton in the vicinity where they were caught.

Millport (S. M. MARSHALL).

Drs. ORR and MARSHALL have made some observations on the rate of sinking of *Calanus* eggs in sea water of different temperatures and in cultures of various organisms. Diatoms seem to emit some substance which causes delays in sinking. They have continued work on the physiology of *Calanus*.

Publications.

FRASER, J. H.: The Chaetognatha and other Zooplankton of the Scottish Area and their value as Biological Indicators of Hydrographical Conditions. Scot. Home Dept., Mar. Res., 1952, No. 2.

GLOVER, R. S.: Continuous Plankton Records: The Euphausiacea of the North-Eastern Atlantic and the North Sea, 1946—1948. Hull Bull. Mar. Ecology, **3**, 23.

REES, C. B.: Continuous Plankton Records: The Decapod Larvae in the North Sea, 1947—1949, *ibid.*, **3**, 22.

A paper on the young fish and fish eggs in the North Sea, 1932—39 and 1946—49 by Dr. HENDERSON will complete Vol. III of the Hull Bulletins. Vol. IV of the periodical will assume the slightly revised title "*Bulletins of Marine Ecology*" and in future it will be published by the Scottish Marine Biological Association and be distributed by the Edinburgh Laboratory.

Spain.

(J. CUESTA).

Two cruises were performed during the year by the oceanographical ship "Xauen", one during the months of February and March in the eastern region of the Strait of Gibraltar, and the other during July and August from the said Strait up to the Bay of Biscay. In both cruises many samples of plankton were taken, which are now being studied.

The laboratories of Vigo (Galicia) and Santander on the north coast go on with the regular planktonologic observations during the whole year, the latter ones essentially for determining the spawning times of the sardine (*Clupea pilchardus*) and of the anchovy (*Engraulis encrasicolus* L.).

